



Calhoun: The NPS Institutional Archive
DSpace Repository

Theses and Dissertations

1. Thesis and Dissertation Collection, all items

1984

The Bank of Westminster and Hyland Park
construction contracts as engineering student
classroom projects:construction phase.

Bossa, Robert J.

<http://hdl.handle.net/10945/19180>

Downloaded from NPS Archive: Calhoun



<http://www.nps.edu/library>

Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

AD-A164 818

Construction Research Series

THESIS
B72585

THE BANK OF WESTMINSTER AND
HYLAND PARK CONSTRUCTION CONTRACTS
AS ENGINEERING STUDENT CLASSROOM PROJECTS;
CONSTRUCTION PHASE

By
Robert J. Bossa

REC
FEB 27

**Construction
Engineering and
Management
Program**

This document has been approved
for public release and sale; its
distribution is unlimited.



University of Colorado
Department of Civil, Environmental,
and Architectural Engineering
Boulder, Colorado 80309

86 2 27 05

T238736

FILE COPY

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY
PRACTICABLE. THE COPY FURNISHED
TO DTIC CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.

1

THE BANK OF WESTMINSTER AND
HYLAND PARK CONSTRUCTION CONTRACTS
AS ENGINEERING STUDENT CLASSROOM PROJECTS;
CONSTRUCTION PHASE

By
Robert J. Bossa

Presented to:

The Department of Civil, Environmental,
and Architectural Engineering
The University of Colorado at Boulder
In Partial Fulfillment of the Requirements
for a Masters of Science Degree

The University of Colorado at Boulder

Boulder, Colorado

December 13, 1984

DTIC
S ELECTED D
FEB 27 1986
A

N66314-70-H-0062

This document has been approved
for public release and sale; its
distribution is unlimited.

This Report for the Master of Science Degree by
Robert J. Bossa
has been approved for the
Department of
Civil, Environmental, and Architectural Engineering
by

CONTENTS

List of Figures

Acknowledgements	iii
Introduction	1
PART I - PROJECT REPORT	I-1
The Organization Structure and the Creation of Walters Construction Management	I-1
Objectives of Walters Construction Management as Compared to Theoretical Organizations	I-8
Differences Between Walters Construction Management and Other Construction Managers .	I-11
Advantages and Disadvantages of Walters Construction Management	I-16
PART II - LEGAL AND CONTRACTURAL REQUIREMENTS	II-1
Theoretical Application	II-2
Practical Application	II-9
PART III - CONCLUSIONS	III-1
PART IV - PHOTOGRAPHS	IV-1
APPENDICES	
A. Bid Documents and Contract	A-1
B. Daily Logs	B-1
C. Project Management Software Utilized ...	C-1
D. Subcontract Backcharge	D-1
E. Problems and Solutions	E-1
F. Bibliography	F-1

7/25/52
352585
C1

LIST OF FIGURES

Figure		Page
1	Organizational Structure	I-2
2	Construction Phase Photograph Location	IV-3

Bossa, Robert J. (M.S., Civil Engineering)

The Bank of Westminster and Hyland Office Park Construction Contracts as Engineering Student Classroom Projects: Construction Phase.

Employers often find that the recently hired engineering school graduate has difficulty in correlating the methodology and the technology learned in the classroom to actual construction projects. The following report attempts to help in tying together classroom work and an actual construction project.

Information for the report was provided by Walters Construction Management, Inc. The report describes an actual office building presently under construction. Portions of the report are intended to be used as narrative type lessons, other parts are to be used as laboratory problems.

The report focuses on the organizational structure of the construction firm and the contractual requirements of the construction firm. The text then analyzes selected portions of the project in order to explain why certain construction related procedures have been made.

Photographs of the construction phase of the project are presented. The photographs are intended to provide a pictorial history of the construction project.

Past reports on this project will be used along with this report to develop a complete, total construction project for classroom application.

This abstract is approved as to form and content.

ACKNOWLEDGEMENTS

I would first like to thank the Bill Walters Company, specifically Mr. John Fox and Mr. David Metcalf of Walters Construction Management, Inc., who provided this construction contract to be used as a classroom project. The amount of time and costs expended by them and the firm is truly appreciated.

I would also like to thank Professor James Diekmann for his help and advice throughout this project.

INTRODUCTION

Within the scope of the undergraduate and graduate Civil and Architectural engineering programs is the need to relate information from textbooks and classrooms to the actual construction industry. This report will attempt to bridge the gap between real world situations and the world of academics.

Walters Construction Management has agreed to let their organization and one of their current projects serve as a model for this report. The Bank of Westminster is under construction at the corner of 92nd Avenue and Sheridan Blvd. The bank project along with the organizational structure of Walters Construction Management will be studied and analyzed and results will give a realistic approach to future student assignments.

The objectives of this report are to study the construction phase of the Bank of Westminster and to tie it to specific graduate and undergraduate courses offered in the Construction Management field in the Department of Civil and Architectural Engineering. This report will study the development of the B.L. Walters company from the original corporate entity of Walters Construction Management and why this cooperation came into existence.

The actual organization of Walters Construction Management will be used as a reference for study in the Construction Management (CE 525) class. This will give the class a successful and working organization to compare with the different organizational structures referred to in the classroom. Students will be able to discuss the advantages and disadvantages of this particular organization and compare their thoughts with the thoughts of members in the organization of Walters Construction Management. The class will be given the organizational structure and then discuss the formal and informal links of each department. Afterwards they can again compare their assumptions or results with those of the actual formal and informal links within Walters Construction Management.

By following one of the numerous subcontractors on this job students will experience the actual paper flow and contract related problems encountered during this project. This will be very effective in the Construction Contracts (CE 524) class when discussing effects of backcharging or how backcharging or changes in the plans will affect the subcontractor and his contract.

The use of time lapse photography will be used in the Construction Engineering I & II (CE 528 & CE 529) classes. Time lapse photography will show actual repetitive construction methods used on this project. The class will be able to analyze these methods and decide on

possible alternative solutions to these specific construction practices.

Each classroom application will have packaged slides specifically for that module which will give a visual recording of the project at specific construction phases and will assist students in visualizing the project phase being discussed. The slides will encompass the project from the clearing of the site through the complete building.

PART I - PROJECT REPORT

THE ORGANIZATION STRUCTURE AND THE CREATION OF WALTERS CONSTRUCTION MANAGEMENT

The B.L. Walters Corporation was formed approximately three years ago, in 1981, to the corporate level from the Walters Construction Management organization which was formed in 1974. The primary motivation for forming a full service development company from the traditional construction management firm was the desire of the Chief Executive Officer to have control over what was being developed and how that development was to be accomplished. Because of the objective to have complete control, Walters Construction Management expanded and became the Bill L. Walters Company.

This Corporation is comprised of numerous companies that handle the acquisition of the land, the development of the raw land, the management of the construction, the maintenance and management of the constructed building, the leasing of completed buildings, and a Chief Financial Officer to maintain all the accounting records of the B.L. Walters Company. The overall corporate structure is shown in Figure 1.

ORGANIZATIONAL STRUCTURE

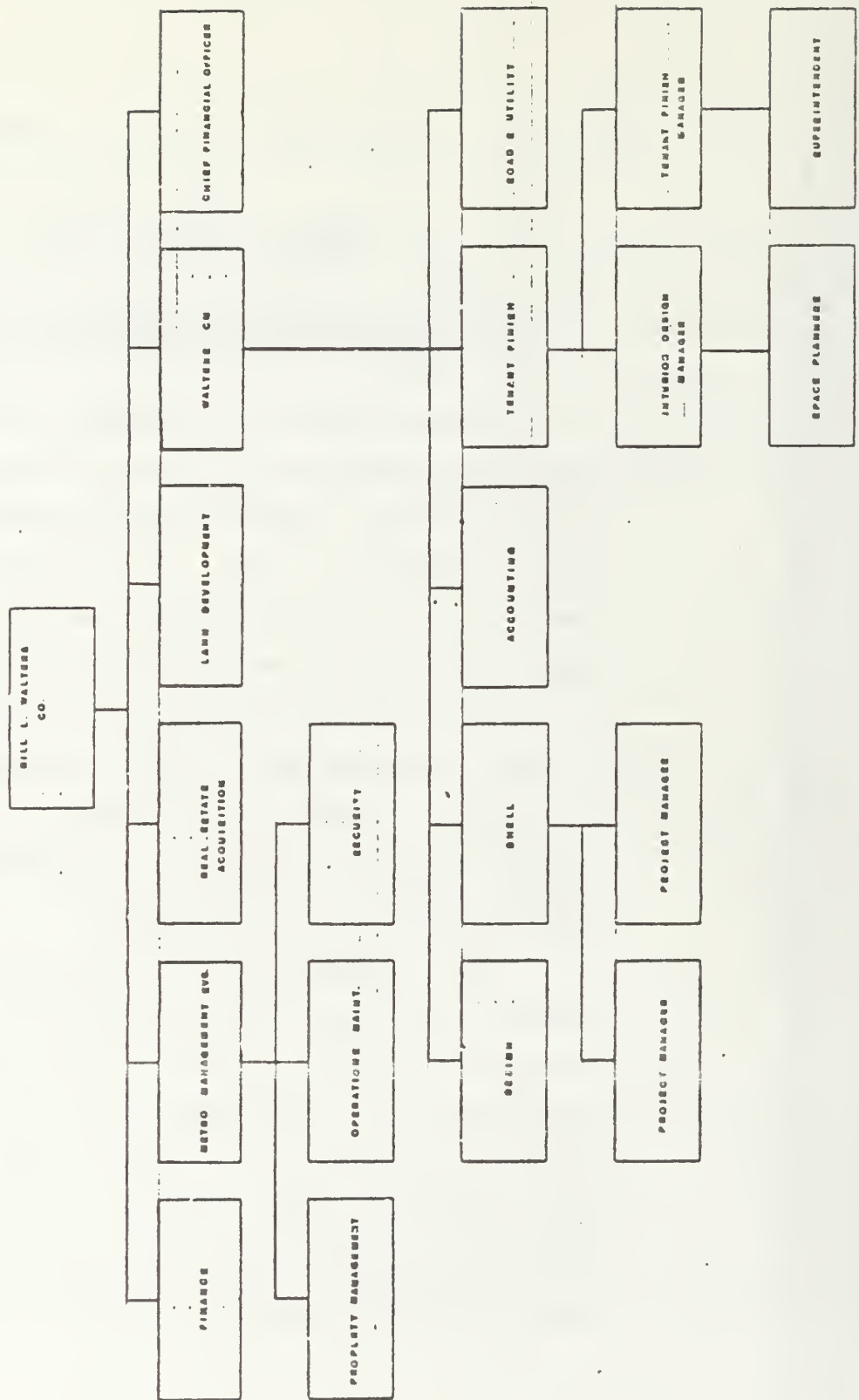


FIG. 1

This report will deal strictly with the construction management portion of the entire organization and will also touch upon the management/maintenance of a project once a project has been completed. The construction management part of B.L. Walters Company, hereafter referred to as Walters Construction Management, is a wholly owned subsidiary, and is divided into five areas. These areas are Architectural and Design, Shell Construction, Tenant Finish, Roads and Utilities, and Accounting.

Each of these separate areas operate on an arms-length, semi-formal basis with the B.L. Walters Company. At the head of Walters Construction Management is the Vice President and General Manager who reports directly to the President of B.L. Walters Company. The manager of Shell Projects and the Manager of Tenant Finish, along with the Manager of Road and Utilities, the Senior Architect and the Senior Accountant report directly to the Vice President.

The structure of Walters Construction management makes it very clear that as the general contractor, Walters Construction Management will subcontract a great deal of the work. As an organization they do not maintain the personnel to do the majority of work that a General Contractor can. By maintaining their own Project Managers and Field Supervisors, Walters Construction Management maintains control of these projects. In the architectural area the design drawings may be produced

either by Walters or by outside designers. In the event that an outside designer is used, Walters Construction Management maintains control over the actual design, the design costs, and the design period.

During the design phase both the Shell Construction Department and the Tenant Finish Department are deeply involved in the design phase. All agreements between the various departments are at arms-length and there are written contracts between the various departments.

Tenant finish is one of the new areas created at Walters Construction Management because of the increased need for specialists to deal with tenants and getting them moved into their building. It is seen as one of the most important areas within the Walters Construction Management organization. At Walters Construction Management they recognized the need for this specialty and reorganized, creating Tenant Finish. The improvement of and a more receptive attitude toward tenant finish was seen as a bona fide plus in the renting of completed buildings and development of good customer relations. The Tenant Finish Department has become one of the biggest departments of Walters Construction Management. The Tenant Finish department is considered the income stream for Walters Construction Management. Working with the tenants and insuring their satisfaction is one of the biggest reasons for the success of Walters Construction

Management. To enhance the organization's credibility and to utilize the "one stop shopping" principal, a good Tenant Finish Department is essential to a successful company.

The goals of Tenant Finish are to give the customer complete satisfaction in their final spaces. Tenant Finish works very closely with the Design area and the Shell Construction area in the very beginning to alleviate problems with the customer's requests. The Tenant Finish Department is structured so that under the Manager of Tenant Finish there is an Interior Design Manager who, with the space planners assigned to him, will do the interior design for the tenant based on proven interior designs. The Interior Design Manager will incorporate into his designed spaces other options or additions that the customer may desire. Walters Construction Management builds typical office buildings thereby creating a quick, concise decisionmaking process of what will work in a specific building and what will not.

When the building is erected and weatherproof, the Project Managers for Tenant Finish, who with their own Field Supervisors, complete the interior portion of the building. The Project Manager for the Tenant Finish will maintain clear, concise records of what is being done to the interior of the building. With the typical building having more than one tenant, he will keep

records of what spaces are for what tenants and keep his field supervisors apprised of any changes in design or schedule. The Tenant Finish Department will also do some work for organizations other than Walters Construction Management. The amount of this work is minimal and only comes to approximately ten percent of the actual tenant finish work accomplished.

The Shell Construction part of the Walters Construction Management organization is very similar to the Tenant Finish Department. Under the Manager of Shell Projects there are various Project Managers and in turn, under the Project Managers are various Field Supervisors.

The Project Manager would be involved with the project from the very first design meeting through the tenant occupation of the building. During the initial design meeting the Project Manager will be there with the Architects and Designers so that when any questions arise about the design in conjunction with the actual construction, it can be answered quickly. The Project Manager also communicates with the various Consulting Engineers hired by the Design Department to help answer any questions that may come up about the Mechanical, Electrical, or Structural systems. The Project Manager would report directly to the Manager of Shell Projects with any problems that he could not solve informally with his counterpart in the Design area, Tenant Finish area, Accounting area, or Road and Utility area. The basic

philosophy of the entire organization is to solve any problem that may arise at the lowest possible level.

If the Project Manager can't solve a problem informally, he would move up his chain of command to the Manager of Shell Projects who will try to solve the problem at his level. If this is not possible then the Vice President and General Manager of Walters Construction Management will make the decision. Because of the informality and the close proximity of these various Managers and Project Managers it is infrequent that a problem can not be solved among the people involved.

In conclusion, the Walters Construction Management organization is a main part of a Design-Build organization that also incorporates the management/maintenance of the structure. The Walters Construction Management organization goes one step further than the Professional Construction Manager organization and not only designs and builds, but also leases, manages, and maintains the structures they erect. This keeps Walters a step ahead of their competition. Walters Construction Management controls the design, the design cost, and the design period but also maintains their credibility and their positive public image by catering to their customers not only in the construction phase, but afterwards in the moving in and leasing phase.

OBJECTIVES OF WALTERS CONSTRUCTION MANAGEMENT AS COMPARED TO THEORETICAL ORGANIZATIONS

In comparison with normal project delivery systems, Walters Construction Management is a combination of the Owner-Builder organization and the Professional Construction Management organization.

Theoretically, a Professional Construction Management organization combines three parties into a team consisting of the owner, designer, and construction manager in a non-adversary relationship. The construction manager works closely with the owner and the designer from the beginning to the completion of the project. The construction manager does not normally perform construction work with his own forces or guarantee the overall cost of the work. Once the budget is approved the construction manager monitors developments in schedules, quality requirements, and spending in order to maintain the objectives established in the beginning of the project. The construction manager advises and coordinates the procurement of any long lead materials or equipment. He will monitor the payments to subcontractors, the changes in contracts or any claims. In general, the construction manager monitors actual cost, schedules, and quality control.

Walters Construction Management does all of this, but is different in one very important aspect of the typical model. Walters Construction Management does not go out and bid on projects to manage; their projects are established down through the hierarchy of their chain of command. The Chief Executive Officer who is an architect by training, may want to develop land in accordance with members of an organization that he has an interest in, thereby creating the projects.

Walters' desire to maintain absolute control over their project is in line with the aims of the Owner-Builder organization. In theory, the owner is responsible for the design and construction of the project. The owner has the option of using his own work forces or to subcontract part or all of the work.

The Walters Construction Management organization is a Line and Staff Task Force. As shown in Figure 1 there is a distinct hierarchy and a designated chain of command. The hierarchy is designated only for those decisions that can't be resolved at lower levels in the organization. A strength of Walters Construction Management is the project orientation of the entire project team. One of the weaknesses, in theory, in a line and staff organization is that individuals may be troubled by the dual accountability to both a project and a functional boss.

Walters Construction Management is also structured somewhat as a Matrix Organization. The informal lines of the structure opens lines of communication at all levels and gives people the ability to talk with counterparts and maintain a knowledgeable and productive environment. Therefore, Walters construction Management is most definitely a Line and Staff Task Force, but with a little of the Matrix Organization added to help alleviate any communication problems.

In conclusion, the main objective of Walters Construction Management is to maintain absolute control over the project and to produce a product that is a marketable commodity.

DIFFERENCES BETWEEN WALTERS CONSTRUCTION MANAGEMENT AND OTHER CONSTRUCTION MANAGERS

A major difference between Walters Construction Management and other developers is the "one stop shopping" approach. Not only will Walters Construction Management design the building, they will manage the interior finish, and will maintain the upkeep of the building and surrounding grounds. This is a major difference since most developers utilize a fragmented approach to the development of buildings.

A construction Manager who utilizes the fragmented approach will have someone come in who owns the land and wants it developed. This manager may or may not help find a designer that can design what the owner wants on the land. Once the design is approved by all interested parties, it is then turned over to the construction manager. The construction manager in turn requests bids based on these designs from various general contractors who in turn receive bids from various subcontractors.

Once the construction manager picks his general contractor he will manage the job as per plans and specifications and keep track of any changes in the project. He will be the owner's representative on the job. The construction manager, in most instances, will carry

professional liability insurance for this specific project and also on any other project he may be managing at the time.

Under Walters Construction management, a major difference is that Walters Construction Management is covered under an umbrella policy from the B.L. Walters Company for professional liability. When Walters Construction Management gets a project to be managed, it usually has been first brainstormed at the Chief Executive Officer's level of the B.L. Walters Company. The land has been acquired under the Land Acquisition Department of B.L. Walters Company, and the developers in Land Development may have specific plans for this tract of land.

Walters Construction Management, like other construction managers, would go out looking for bids for the various parts of construction, but would act as their own general contractor. The differences are quite unique in that Walters Construction Management has control over the design of the project, control of the construction management of the project, control over changes in the design of the project, and once the project is complete, control over the management of the building.

A developer or construction manager who utilizes the fragmented approach can run into many difficulties during the project's construction. There could be quite a bit of money spent in litigation determining who is

responsible and who will pay for corrections to any faulty design or construction applications. If once a tenant has occupied the building and there are maintenance problems, the developer must get in touch with the people who do their maintenance to correct it. In the B.L. Walters company, they would handle their own maintenance problems and there would be no doubt as to what the priority is.

In the fragmented approach, the "finger pointing" and litigation could go on for quite awhile. Finding out who is responsible and then making sure the responsible party adheres to their end of the agreement could be costly not only in dollars, but also in time. While in the full service development company such as Walters Construction Management, a decision could be made and action to fix the problem could be imposed.

The Walters Construction Management organization allows decisions to be made faster in the pre-construction phase and the construction phase than in the fragmented approach. This is because in the fragmented approach, the construction manager or developer is trying to touch base with numerous people involved in the project at various locations. The start up cycle in decisionmaking at Walters Construction Management is quite short compared to a fragmented approach of construction management. At Walters Construction Management the process of decisionmaking is known and has been

utilized over and over again. The members of the organization know who is in charge and where to go for certain decisions. In a fragmented approach, the construction manager must first establish the lines of communication and the chain of command. This alone is very time consuming.

A significant difference is that the Chief Executive Officer of B.L. Walters Company has absolute control over the Walters Construction Management organization, as well as Land Acquisition, Land Development, Maintenance/Management, etc. which ensures a quick decisionmaking process. Because of this control, the Walters Construction Management organization can be more positive and make absolute commitments to cities, municipalities, and/or other public service areas for not only the construction of a project but its overall development. This greatly enhances the credibility of the organization as well as maintaining the flexibility to propose or accept alternatives to the design quickly and effectively.

In conclusion, the significant difference between Walters Construction Management and the fragmented approach is that the decisionmaking process in both the pre-construction and construction phase is quicker and much more efficient in an organization such as Walters Construction Management. Having all the participants for a certain project under one roof makes the life of the

project from conception to completion significantly shorter and improves the quality of the finished project to the tenant or owner.

ADVANTAGES AND DISADVANTAGES OF WALTERS CONSTRUCTION MANAGEMENT

In interviews and conversations with several members of the organizational structure of Walters Construction Management, some distinct advantages and disadvantages of the organization appeared.

A distinct advantage that appeared frequently was that there was a more positive attitude towards the customer and that commitments would be made and adhered to. The majority of people felt that this was a great advantage in enhancing Walters Construction Management's credibility and was in conjunction with the B.L. Walters Company policy of insuring the customer's satisfaction. At times this could be a disadvantage. Because of the organization's feeling of responsibility, they could be abused by trying to make the customer happy at all costs. Having to maintain the warranty can sometimes create the feeling of jumping through hoops.

During good construction periods, the desire to control the project in its entirety could be an advantage because you have a varied selection of customers to choose from. A disadvantage to maintaining complete control is that a number of contractors don't want to give up control to Walters Construction Management, so they don't work for them. This is found more often

during good construction periods. This could put a damper on the marketplace for Walters Construction Management, creating a loss of consultants and a loss of a certain part of the market. During slow times in the construction field, this desire for control is not an advantage, but it is not a big disadvantage.

One disadvantage is that it costs more to do business. The continuity of the organization creates a need for more supervisors to be kept on the payroll when times are slow. In other organizations they would release some supervisors, but at Walters Construction Management they are retained.

Having changes dealt with at a lower level in the organization is a valuable advantage. If there is a policy change affecting a project, because of the informal chain of command within Walters Construction Management, it can be dealt with quickly and at the level the change is having the most effect. The most distinctive advantage observed was that there was more teamwork in the organization at Walters Construction Management. The adversary relationship was minimal and it was observed that any adversities between certain departments could be resolved. The goal of Walters Construction Management is known by everybody and the teamwork needed to achieve that goal is there. It is respected that when it comes down to "passing the buck" or if adverse designs or adverse construction occur, it is all kept within the

B.L. Walters Company organization. This enhances the ability for problems to be solved expeditiously and favorably to all parties involved.

In conclusion, based on my interviews and personal observations, it was found that the advantages of the Walters Construction Management organization outweighed the disadvantages. Various members of the organization felt that the teamwork was favorable for a successful project and that having a self-contained organization where any number of problems from accounting to design could be solved quickly and effectively, was mandatory for a successful project.

PART II - LEGAL AND CONTRACTUAL REQUIREMENTS

Walters Construction Management subcontracts a major portion of their work and with this comes the responsibility to insure that they receive their specified requirements.

This section will address the requirements of a Construction Management firm as regards the bidding process, contracts, job progress management, job cost management, planning and scheduling, modifications, and commercial issues. It will then address the practical application of the aforementioned procedures. These procedures will be documented with actual paperwork used on the Bank of Westminster project.

THEORETICAL APPLICATION

At the beginning of a project plans and specifications must be developed and approved for construction. This requires that the engineering departments and the designer be able to formally agree on a specific set of plans that will fulfill the requirements of the owner. In conjunction with the plans, the various departments will specify any restrictions or constraints that must be included in the specifications.

Once the plans and specifications are approved the Construction Management firm will enter the bidding process. A letter of inquiry is sent out to various subcontractors to determine what contractors are interested in bidding on the project. It will describe when the bids are to be invited, the general nature of the project, what kind of bid is required, and when bids are due.¹ Before the Construction Management firm or owner solicits bids from any contractor he will perform extensive background research on these contractors checking their previous projects, their financial stability, and other general information. Once the background research is complete, the owner will send out invitations to bid. The package will contain the plans and specifications, the type of contract that will be used, the bid form, and

the general conditions of the bid invitation. The subcontractor is then required to assemble his bid.

Once the subcontractor assembles his bid, the owner and architect have 30 to 60 days to award the job. At this time the owner and architect will discuss modifications or changes with the two lowest bidders. In these discussions a clear understanding of the agreements must be reached. Once an agreement is reached the Notice of Award is sent to the subcontractor. This authorizes the subcontractor to start ordering long lead time items and to start shop drawings. In the Notice of Award it is stated that a formal contract will be forthcoming.

In the construction contract received by the subcontractor the description of work, the description of terms, a completion statement insuring the subcontractor is going to provide the labor, material and equipment, and any other general provisions deemed necessary by the owner or his representative. This contract will also stipulate how the subcontractor will be compensated for the work, and have a project title and project number. This form requires signatures, the subcontractor's license number, his Workmen's Compensation Insurance Company, and his Personal Liability Insurance Company with policy numbers and expiration dates.

Once the project is underway it must be insured that the subcontractor does what was specified. Utilizing job progress management is one of the many factors

the owner's representative on the project site must be aware of.² In a job progress report the subcontractor will have his job broken into manageable activities and easily understood schedules. A bar chart is easily understood and has activity start and completion dates. This is a widely used tool in understanding a project's progress. The subcontractor, when placing his bid, can set up his progress report based on the time constraints set by the owner. To make this progress report work, meetings must be established on a routine basis so the owner is informed of the subcontractor's schedule. Daily reports filed by the field supervisor will give an account of what the subcontractor accomplished and if he is on schedule. This owner's daily report can be compared with the subcontractor's daily report for any discrepancies. In the daily reports it will show who did what, with how many crew members, and with what equipment and material.

Along with the progress of the job, the project can be managed with the daily, weekly, or monthly costs of the job. The subcontractor and owner have agreed on the subcontractor's costs and monitoring his costs will help insure the owner and subcontractor know what is being spent and for what. The project job cost sheet should break down costs into material, equipment, labor, and any other category the subcontractor or owner deems necessary. This will simplify the subcontractor's requi-

sition for payment. A change that has increased the scope of the contract or a mistake in labor requirements will eventually show up in the cost management forms.

The subcontractor can be awarded the job under several different kinds of construction contracts. The various contracts can be lump sum, cost-plus-fixed-fee or percentage-fee, and guaranteed-maximum-plus-fixed-fee.³ Once the job has been awarded the subcontractor must take steps to contact his material suppliers and contract for the purchase of the material needed.⁴ A requirement by the owner is a list of the material suppliers utilized by the subcontractor and notification immediately if the list changes.

To keep abreast of the construction costs the owner and the subcontractor maintain a day to day record of material costs and labor. The owner's representative on the job can keep track of labor by daily or weekly time cards submitted for approval. Copies of all material requisitions that have been delivered should also be brought through the owner's field supervisor for submittal to the accounting department. Along with the time cards the field supervisor will fill out daily logs of what occurred on the project, what work was accomplished, crew size, equipment used, and any other valuable information. In the mechanical work it is extremely important for the plumbing subcontractor to keep records of the various pipe sizes that are used, valves and

fittings, and the roughing for fixtures as well as the finished fixtures. This will give the subcontractor an idea of the progress of his job by the amount of material in place and also keep check on any pilfering that can occur.⁵

In the beginning of the project the subcontractor should be advised as to the proper format for requisitioning payment. The owner or architect must clearly state what vouchers, payrolls, bills of lading, or other material he should have; the legal requirements that must be met; when the requisition must be ready; who must approve it; and when to expect his money.⁶

Most contracts will stipulate that monthly requisitions be submitted. This helps the accounting department maintain an active account of the cost for the project. It also gives the owner some leverage if he is not pleased with the progress and insures that inspections will be done at timely intervals, on the project by his field supervisor before payment is authorized. When a requisition is submitted a certain percent is retained as a retainage fee. The sole purpose for this retainage is to make sure the owner does not pay the full value until all work is complete.⁷ This will act as an incentive for the subcontractor to complete work that may be in dispute.

During the course of a project change orders occur. There are numerous reasons for change orders and

usually can be no trouble if they are handled expeditiously and properly. Some of the more frequent reasons for change orders are changes due to additional work, changes caused by errors in planning, changes in codes creating extras, and extra compensation because of job conditions.⁸

Changes due to additional work are caused by the owner or architect wanting to change the type of work, upgrade the quality of certain material, or make an addition. Changes due to errors in planning might be errors in dimensions or omitting an essential piece of equipment. The subcontractor is responsible for knowing the codes of his trade and should be aware of any changes in the codes. Change of job conditions can be created by the owner or architect being indecisive, the owner may have financial trouble and slow the job down, or an incompetent subcontractor can not accomplish what he originally agreed on.

Whatever the reason for changes a procedure must be established for processing these changes. Since the changes or modifications will reflect what is happening on the project site, the information must come from the project site itself.⁹ A change order can occur at any point of the total construction operation and should include any specific information concerning the exact area where this change originated and who initiated it.¹⁰ Prompt notice should be given to the Contractor, the

Owner, and the Architect of any proposed changes. This will give all the personnel involved the earliest notice of any impending changes.

The authority to authorize changes or modifications will be with the owner or the architect or their designated representatives. Therefore complete and proper procedures for recording proposed changes or modifications by the field supervisor are extremely important. There must be complete information obtained from the field supervisor covering every step from the initial suggestion of the change, to the estimation of material and labor required for the change, the new agreement between the owner and subcontractor, and the cancellation of the change or the incorporation of the change.¹¹ Because of the various reasons for changes and modifications a high priority should be to have a member of the contracting organization examine the bidding documents from a contractual standpoint and determine where changes may be adviseable.¹²

In conclusion, the object of any contracts administrator is to see that problems are addressed before they reach the construction site. Clear, concise procedures for the contractors to follow when bidding for a project and explicit guidelines on how to address any problems once the project is started should be established. Once the guidelines and rules are established and understood by all parties concerned then a well organized and properly run project can be expected.

PRACTICAL APPLICATION

The practical application of legal and contractual requirements will be discussed utilizing one of the subcontractors for the Bank of Westminster project.

Walters C.M. started their preliminary meetings with the various engineering departments, architects, and project manager for the Bank of Westminster as early as March 1984. In these meetings preliminary designs were examined and reviewed to alleviate any future construction or management problems. The past experiences of the engineers and the project manager could help identify problems in the design that will effect the construction of the project.

When the plans and specifications were finalized Walters C.M. sent out invitations for bids. Having dealt with contractors or subcontractors in the past Walters C.M. has a list of acceptable contractors and will notify them of possible projects. During the preliminary design meetings Walters C.M. had already been in touch with various contractors and subcontractors explaining the project and getting responses from interested contractors. Walters C.M. is a private organization and therefore does not have to pick the lowest bidder or accept the lowest bid. Having sent out a letter of inquiry

Walters C.M. will receive a Bid Form from the various contractors stating they have reviewed the plans, specifications, and addenda prepared by the design firm hired by Walters C.M.. It will give the name of the project, the bid amount, and what they will accomplish. The bid form will state the contractor will formalize the work with the signing of a written contract within ten days of receiving a written "Notice of Award". See Appendix A, Fig. 1.

Before Walters C.M. sends a "Notice of Award" they will review the contractor's bid form to insure he received all of the addenda and review any exceptions or changes the contractor made to what is specified. The contractor and Walters C.M. will insure there is a clear understanding of the agreements before a "Notice of Award" is sent. These agreements can be made over the phone or in person, but proper documentation must be required. See Appendix A, Figure 2 for copies of phone bids that the plumbing subcontractor made deleting certain items, revised prices and what was not included on the original bid.

The "Notice of Award" is then sent to the contractor, referencing the project by title and location, for him to proceed based upon his proposal of the dated bid form. The "Notice of Award" will give the contractor authorization to start shop drawings and to order long lead time items. Within the "Notice of Award"

is a commitment that a formal contract is forthcoming. See Appendix A, Fig. 3.

Walters C.M. requires that once the contractor receives his "Notice of Award", a list of the material suppliers that the contractor will be utilizing is submitted and if any changes to the list occur they will be notified immediately. See Appendix A, Fig. 4.

Within 30 to 60 days Walters C.M. will send out a standard Subcontract Form for the subcontractor to review. Their form is very similar to the American Institute of Architects Document A101. It will contain the date of agreement, who the agreement is made between, the project name, the architect's name, and the provisions of the contract. This form will stipulate the work to be accomplished and will provide standard provisions on the back. Additional provisions may be added and noted for the subcontractor's verification and approval. As discussed in the Theoretical Application a Workmen's Compensation Insurance Policy and a Personal Liability Insurance Policy with policy numbers and expiration dates appears on the bottom of the Standard Subcontract Form. See Appendix A, Fig. 6 and 7.

One of the additional provisions Walters C.M. added was provision 43 which addresses labor disputes on the project. This provision requires that work be continued on the project without delay. It was discussed with the Project Manager on how access to the project

would be handled in case of a picket or dispute. Two entrances to the project would be authorized, one for the picket lines and one for the subcontractors not in dispute.

Up to this point Waltes C.M. practices the theoretical applications previously mentioned, but on this project there is a definite lack in formal job progress management. The Field Supervisor monitors what is accomplished on a daily basis, but the lack of an activity listing and a logic diagram creates difficulties in accurately keeping track of the project's progress. The bar chart is one tool that is being used, but the extensive nature of construction and construction management stipulates that more should be done. This bar chart was created by Walters C.M. and does not have any input from the subcontractor. To tell the subcontractor he is behind or ahead of schedule is strictly Walters C.M.'s interpretation.

Another tool monitoring the job progress of the Bank of Westminster is the 'daily logs submitted by the Field Supervisor. See Appendix B. These logs give a day by day account of what occurred on the project and what the subcontractors accomplished. It gives updates of any specific problems with weather, concrete received on the job, and other general problems. The logs will tell what equipment was used, for how long, and why. This not only

helps in monitoring the progress of the job, but is useable documentation for backcharging a subcontractor.

Walters C.M. has the capability to monitor the project progress and utilizes the computer on other projects. On the Bank of Westminster it must be assumed that the smallness of the project plus the release of certain employees created a void.

Walters C.M. has the capabilities of inputting activity listings and having a logic diagram created. They also have the capabilities with this logic diagram to establish resource leveling, scheduling, and cost control. They utilize the PMS-II project management system which is one of the most extensive project management systems for a personal computer. See Appendix C.

In the area of job cost control Walters C.M. again has extensive capabilities in this area. They utilize the Estimax software which can give them 3 levels of cost for any project. Each level will have a breakdown of cost code, description, labor cost, material cost, subcontractors, totals, and dollar per square foot. As the levels get more explicit a breakdown for quantities and units is also used. See Appendix A, Fig. 8. But Walters C.M. doesn't utilize these tools on the Bank of Westminster project.

During the Bank of Westminster project problems of a subcontractor not being able to accomplish part of the work originally contracted for surfaced. This in

turn created a modification to the original agreement. Walters C.M.'s field supervisor was keeping track of the subcontractor's progress and found he was getting behind schedule. The project manager was notified and he in turn got in touch with the subcontractor. The project manager then offered to do a certain part of the work for the subcontractor with Walters C.M. personnel. During the conversation it was agreed what Walters C.M. would do and the maximum amount it would cost the subcontractor. This conversation was referenced by the project manager when he sent a formal letter explaining what Walters C.M. was going to do, how much it would cost the subcontractor, and that a formal Change Order to the contract or a backcharge would be executed. See Appendix A, Fig. 9.

The notification of backcharge was the choice made by Walters C.M. in dealing with this specific subcontractor. In the notification for backcharge is the date, the project name, the subcontractor number which is a key to what subcontractor it is and what kind of work, the cost code, and a description of what exactly Walters C.M. is charging the subcontractor for. See Appendix A, Fig. 10.

After all the work agreed on is done by Walters C.M. a Subcontract Backcharge form is filled out. See Appendix D. The form will have the project name, the subcontract number, the date it was finalized, the cost code, and the notification date. It will describe what

was done by Walters C.M. and the maximum backcharge total agreed on referencing Appendix A, Fig. 9. Attached to the Subcontract Backcharge would be Walters C.M.'s cost distribution summaries, material/equipment invoices, and payroll distribution sheets to substantiate the backcharge. At the bottom is a summary of what money was spent on labor and material. This was then subtracted from the maximum allowable backcharge authorized. As you can see by Appendix D Walters C.M. lost money on this backcharge. An error in the estimate for the maximum cost of this backcharge cost Walters C.M. \$3,089.28.

In conclusion, Walters C.M. utilizes a number of the theoretical approaches to construction management and project control. But in the important areas of progress management and cost management they are not utilizing the tools available within their own organization. Again this could be because of the release of certain people and a lack of manpower to use these tools and also because of the small scope of the Bank of Westminster project as compared to other projects.

NOTES

¹Laurence E. Reiner, Handbook for Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972), p. 33.

²Ibid., p. 73.

³Ibid., p. 40.

⁴Ibid., p. 89.

⁵Ibid., p. 93.

⁶Ibid., p. 94.

⁷Ibid., p. 95.

⁸Ibid., p. 98.

⁹Clarence J. Douglas and Elmer L. Munger, Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969), p. 146.

¹⁰Ibid., p. 148.

¹¹Ibid.

¹²Samuel P. Oppenheimer, Directing Construction for a Profit (New York, N.Y.: McGraw Hill Book Co., 1971), p. 204.

PART III

CONCLUSIONS

The original projected start date for the Bank of Westminster project was to be in April 1984. However the start date was slipped to July, 1984 due to design related and owner induced delays.

The impact of the delay in starting did not cause the anticipated negative effect from the weather. It was originally thought that not having the building enclosed by December, harsh weather conditions would be a detrimental factor. But the weather has cooperated to date and the enclosure of the building should be completed by the end of 1984.

The organizational structure was found to be very effective and maintained a well defined hierarchy. This organizational structure encouraged lateral communication among the various departments within the organization. The close proximity of the various departments was very beneficial to the decision making process. This close proximity also favored a positive and effective team atmosphere. Changes in the plans or specifications or errors in the plans and specifications could be worked out expeditiously. The closeness encouraged a relaxed atmosphere when dealing with peers or superiors and

created effective group meetings for the day to day problem solving.

The field management of the project was very good and was the main reason for the project's progress. The lack of practical construction management practices, (i.e. logic diagrams, schedules, cost management) hindered the management of this project. The ability of the field management to keep the daily logs accurately was a substantial reason for the home office not being misinformed or the project being mis-managed. During a problem with a subcontractor not being able to accomplish the agreed work that he was contracted for, the accuracy of the records kept in the field and forwarded to the home office helped alleviate a more substantial loss of money than was incurred.

Time schedules and deadlines that contractors were held to were established from the barchart created by management. The contractor can not be legally held to these time constraints if he did not participate in their creation. Establishing a logic diagram with the computer capabilities available at the home office would have maintained a tighter schedule and created substantial documentation for contractor backcharges or change orders. On the Bank of Westminster project the computer capabilities available were not utilized to their potential and caused managerial difficulties. These difficulties were only overcome by the abilities of the field

management and project management assigned to the project.

During the evaluation of the pre-cast erection timelapse film it was found that the crew size for the project was efficient and appropriate. The amount of idle time during the pre-cast erection was minimal and the supervision of the crew was adequate. The handling of the precast pieces at times was redundant and could have been more efficient, but the overall process was good.

The brick veneer erection timelapse was also evaluated and the crew size was sufficient. During one established cycle the amount of idle time was so minimal it didn't account for any time on the crew balance analysis figure.

The evaluation of the activity listing, logic diagram, scheduling, and resource availability and utilization was hindered. The inability of management to utilize the computer software capabilities available created a gap in this report's analysis. A more concise and clear understanding of how actual "real world" management coincides with classroom management theory would have been very helpful in the grasp of theoretical techniques for students. The ability to study a project step by step in theory and then to compare it with reality would have helped close the gap between academia and the real world of construction management.

The usefulness of this report to students will help differentiate between the theoretical application taught in the classroom and what happens on an actual job site. The students will understand that a project can be planned and scrutinized theoretically but that intangibles such as human factors in management, changes in project priorities, or changes in personnel can not always be accounted for in theory. The ability for management to be flexible and to keep clear, concise records is very important, but also management must be able to deal with those intangibles in a practical and professional manner. This report shows how the theoretical and practical application of construction management coexisted on the Bank of Westminster project and what the deficiencies were.

In general the starting date slippage and the loss of some key personnel within the Walters C.M. organization created a severe time factor in the completion of this report. The inability to follow this construction project to its' finish reduced the information available for classroom study.

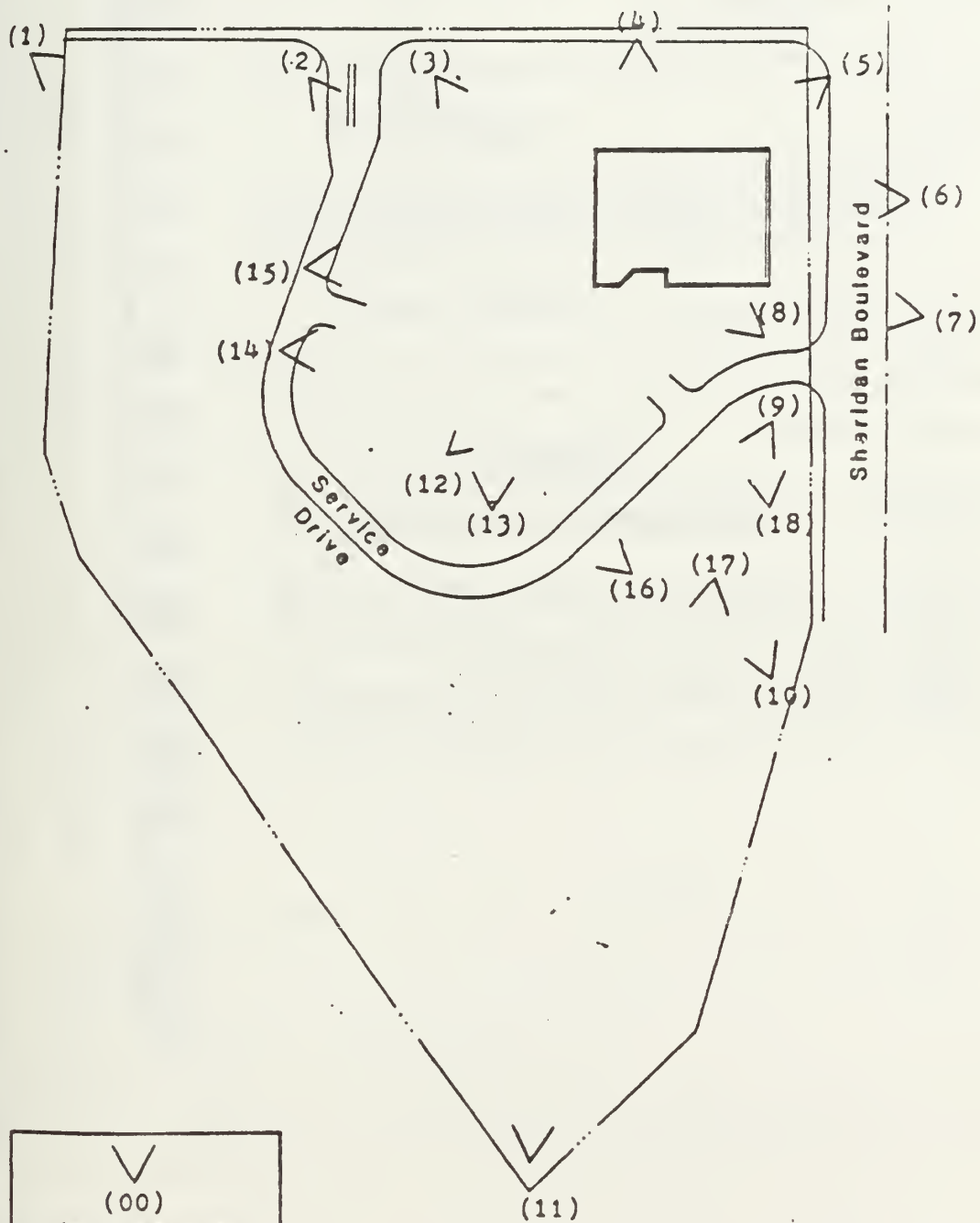
PART IV PHOTOGRAPHS

In conjunction with this project, construction photographs have been taken. The exact location from which they were taken is shown on Figure 2 and description of each view is given.

POSITION	DESCRIPTION
1	View from far North-West property line.
2	View from West side of 92nd Avenue service drive cut out.
3	View from East. Side of 92nd Avenue service drive cut out.
4	View of proposed North elevation.
5	View from far North-West property line (intersection of 92nd Avenue and Sheridan Boulevard).
6	View of proposed East elevation from the far side of Sheridan Boulevard.
7	View from North side of Sheridan Boulevard cut out.
8	View of the proposed South elevation of the Bank.
9	View of existing temporary bank from North side of Sheridan Boulevard cut out.

- 10 View of existing temporary bank from fence line at Sheridan Boulevard.
- 11 View of the site from far Southern Corner.
- 12 View from center of service drive of 5 + 00.
- 13 View of parking log from South edge.
- 14 View from center of service drive at 3 + 00.
- 15 View from center of entry cutout to bank from service drive at 2 + 85.
- 16 View of the proposed South elevation of the bank.

West 92nd Avenue



Figure

CONSTRUCTION PHASE PHOTOGRAPH LOCATION

FIG. 2

APPENDIX A
BID DOCUMENTS AND CONTRACT

The Undersigned further agrees that this proposal shall not be withdrawn for a period of thirty (30) calendar days after the closing time for receipt of bids.

Respectfully submitted:

Name Phinney Co.

By Pres Title

Address _____

Dated this 19th day of June, 1984.

SEAL (if Bidder is a Corporation)

371

Bid Form - 2

FIG. 1

A-2

PHONE

Time

	Yes	No
Including Alternates		

Freight Allowed Yes No
Installed Yes No

DESCRIPTION	AMOUNT
Wet Taps - No City Tap Fees Included	
Tap Fees 4" Sewer	
12" x 12" Wet Tap @ Tubular	
Cost of Night Work - O.T. not included	
Barriacks & Enclosure - No	
Asphalt Paving - (No)	
Structure - Foundation <u>or Pressure</u>	
Concrete	
Backfill	
Pipe Vibration - Trenching OK	
- Spacing OK	
- Kick Blocks OK	
Size of Crew 151 One or Two	

Rec'd By UFB
Date 7-11-94
Time _____

Taxes Included - State	Yes	No
Local	Yes	No
Freight Allowed	Yes	No
Installed	Yes	No

$\therefore -4$

July 17, 1984

Mr.

PLUMBING COMPANY

Re: Bank of Westminster
9191 Sheridan Blvd.
WCM Project #3700

Gentlemen:

Please let this letter serve as a Letter of Intent and Notice to Proceed based upon your proposal of June 29, 1984 for Road Utilities in the amount of \$97,298 for the above referenced project.

A contract will be mailed to you in the near future for your signature. Please proceed with the ordering of any long lead items, etc. as may be required. Also please proceed with shop drawings as necessary. Please forward Certificates of Insurance to our office when you return your signed contract.

Should you have questions please contact the undersigned.

Very truly yours,

WALTERS CONSTRUCTION MANAGEMENT, INC.


John K. Fox, Jr.
Project Manager

JKF/jpl



WaltersCM

A Bill L. Walters
Company

7801 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 778-4800

FIG. 3

A-6



Walters CM A BIL Walters
Company

7801 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

MATERIAL SUPPLIERS

PROJECT: Bank of Westminster

CODE NO: 3710-2505

SUBCONTRACTOR: Plumbing Company

DATE: 8-28-84

(Per Provision No. 35 of Subcontract)

If not applicable, please indicate: _____

NAME OF MATERIAL SUPPLIER	ADDRESS	PHONE NO.
Waterworks Sales Co.	600 W. 48th Ave Denver 80216	292-6206
Carder Concrete Products	8311 W. Carder Ct. Littleton 80125	794-6303
Mobile Premix Concrete	P.O. Box 5183 TA Denver 80217	534-3165

Immediate notification in writing shall be made to the General Contractor if any of the above suppliers are changed.

Mary L

Signature



STANDARD SUBCONTRACT FORM

This AGREEMENT made and entered into this 28th day of August, 1984 by and between Plumbing Company and Bill L. Walters Construction Management, Inc. hereinafter called the contractor.

WITNESSETH:

That the subcontractor and the contractor in consideration of the mutual covenants herein contained hereby agree as follows:

SECTION 1. The subcontractor agrees to furnish all labor, materials, equipment, scaffolding, at times and supplies for all work hereinafter described in accordance with the general conditions, plans and specifications prepared by Harrick & Company hereinafter known as the architect and as described in Section 3 hereof for Private Road Improvements at Hyland Office Park for French Walters Assoc. hereinafter called the owner at 7951 East Maplewood Avenue #100, Englewood, Colorado 80111 in accordance with all conditions of the contract between the owner and the contractor.

SECTION 2. The provisions set forth upon the reverse side hereof, are hereby incorporated into and made a part of this subcontract.

SECTION 3. The subcontractor and the contractor agree that the materials to be furnished and the work to be done by the subcontractor are in accordance with the current contract documents, applicable plans, specifications, drawings and section numbers dated XXXX/XXXX/XXXX/XXXX/XXXX/XXXX/XXXX/XXXX/XXXX/XXXX in Article 16 of the Standard Form of Agreement Between Owner and Contractor dated August 1, 1984 as follows:

1. Provide all necessary labor, materials and equipment required to perform the work which includes but not necessarily limited to the following:
 - a. Approximately 1,005 LF of 12" D.I.P. water main including all valves, bends, tees, thrust blocks, rodding, etc. as noted on the documents, including the relocation/adjustment of two (2) existing fire hydrants and the installation of one (1) new fire hydrant all set properly to finish grade and one (1) 12" check valve. Twelve (12") inch wet tap is included.
 - b. Approximately 1,492 LF of 8" PVC permanent sanitary sewer and approximately 93 LF of 4" PVC temporary sanitary sewer including all bends, wyes, etc., seven (7) precast manholes with poured concrete bases, one (1) 8" sewer tap.
 - c. Approximately 865 LF of 15" RCP storm sewer and approximately 30 LF of 18" storm sewer including four (4) precast manholes with poured bases, three (3) Type R 10 foot inlets, two (2) Type R 5 foot inlets, the removal and re-use of existing materials.
 - d. All excavation and backfill for the above work shall be by subcontractor and shall be performed to the Soils Engineer's requirements.
 - e. All City, State, Federal and RTD taxes are included.
 - f. All work shall be performed as approved by the City of Westminster.
 - g. The cost of all overtime work for making the 12" water tap in Sheridan Blvd. during a weekend night is included, in the amount of \$1,300.00
 - h. The following shall be excluded from the work:
 1. Development fees for sewer or water.
 2. Payment and Performance bonds.

SECTION 4. The subcontractor agrees to keep himself thoroughly informed as to the progress of the job. To begin work within seven days after notification by the contractor. To prosecute the work continuously and uninterruptedly with all possible speed. And, to complete the entire work ordered by this subcontract as scheduled and agreed upon by subcontractor and contractor. The subcontractor, however, shall not be held responsible for any delays caused by the neglect, delay or default of the general contractor, the owner or any other subcontractor.

SECTION 5. BY ACCEPTANCE WHEREOF, the contractor agrees to pay the subcontractor, for the full and faithful performance of his work, the sum of NINETY EIGHT THOUSAND FIVE HUNDRED NINETY EIGHT AND NO/100 dollars (\$ 98,598.00) in current funds, subject to additions and deductions for changes as may be agreed upon, provided, that no payments are to be made unless the subcontractor's rate of progress, work done and material furnished are satisfactory to the contractor, owner and/or the owner's authorized representative and as herein agreed upon. Payments to be made as follows: 50% monthly on work satisfactorily performed the previous month and the balance 50 days after completion, acceptance and payment by the owner of all work under this contract.

IN WITNESS WHEREOF, the parties hereto have executed this agreement for themselves, their heirs, executors, successors, administrators, and assigns, on the day and year first above written.

ATTEST:

BILL L. WALTERS CONSTRUCTION MANAGEMENT, INC.

Account Secretary

John K. Fox, Jr. Title Project Manager

Subcontractor's License No.

Shale Construction Inc.

7-1-85

W.C. Insurance Co.

Pol. No.

Expires

Continental Ins. Co.

9-1-85

P.L. Insurance Co.

Pol. No.

Expires

WCB-011 10/8

Title Pres

PLUMBING COMPANY

1. The phrase "General Contract" (copy of which is on file at the office of the contractor and is available for inspection at all times) shall be deemed to mean the contract between the contractor and the owner with reference to the work described in Section 1 of the subcontract, together with all the provisions, general conditions, plans, drawings, specifications and details which are made a part thereof or referred to therein.

3. Inasmuch as the provisions of the general contract do not conflict with specific provisions herein contained, it is the intent of the parties hereto that each of these provisions shall be incorporated into this subcontract as fully as if completely recited herein. The subcontractor agrees that he will perform the agreement as not to violate any term, covenant or condition of said general contract. The obligations of the subcontractor hereunder towards the contractor shall be the same as that of the contractor towards the owner under said general contract and the obligations of the contractor hereunder to the subcontractor shall be the same as that of the owner towards the contractor under said general contract.

Twenty Fifth (25th)

Jefferson County, Colorado

8. The subcontractor agrees that monies received for the performance of this contract shall be held in trust and used first for labor and materials entering into the work, and said monies shall not be diverted to satisfy obligations of the subcontractor on other contracts.

10. The subcontractor agrees to accept the rates of wages prescribed in the general contract or the scale prescribed by law in case the general contract provides no such scale. If the subcontractor should fail in any respect to perform the obligations contained in this paragraph, the Contractor shall have the right to cancel the subcontract and to employ the subcontractor's employees at the same rates of wages as the Contractor's employees are receiving at the time of cancellation. The subcontractor shall be held responsible for the cost of the replacement of the subcontractor's employees by the Contractor's employees.

⁷² Subcontractor agrees to furnish acceptable bond to contractor if so required, and further agrees to carry and pay for no-bidder's compensation and fee. Contractor agrees, with satisfactory bond and in acceptable companies. He shall also carry property damage insurance. The subcontractor shall furnish the contractor with a certificate showing names of the owners, members of the board and corporation data.

14. The subcontractor shall retain all equipment and materials to be used in the execution of the contract as designated by the contractor providing the transportation costs are not excessive by so doing. It is expressly agreed that the carrier so designated shall be the agent of the subcontractor and not the agent of the contractor.

17. The subcontractor shall not submit or change any portion of this subcontract without the written consent of the contractor first had and obtained.

20. The subcontractor shall promptly attend and make good any defective materials and/or workmanship to the entire satisfaction and acceptance of the owner and/or architect or their authorized representatives. Should the subcontractor refuse or neglect to promptly attend with the correction of reached or defective materials and/or workmanship after repeated notices as set it is agreed that the contractor shall have the right and power to have the defects remedied or changed made at the expense of the subcontractor. And the subcontractor agrees to pay to the contractor on demand any and all tax and/or expenses paid or incurred by the contractor in remedying such defects and/or making such changes, together with interest thereon at the rate of ten per cent per annum, until paid.

12. The subcontractor shall provide all labor, equipment, materials, tools, and facilities necessary for the performance of the subcontract, and shall maintain and keep the same in good order and condition throughout the term of the subcontract.

26. It is understood and agreed it has been the practice of the general contractor to carry any builders' risk fire insurance in the amount of his estimate or bid insurance is variable with, including maximum, in the amount that such estimate is carried by the general contractor on the general contract. The Subcontractor will have no interest in the insurance policy, the proceeds of the insurance do not belong to the Subcontractor and the general contractor is not obligated to carry any known and unknown damages for the benefit of the Subcontractor. Subcontractor agrees to release the general contractor from all claims, damages or losses of any kind, including but not limited to, for the above.

26 The underscriber does hereby certify all sketches, lists, drawings, data, calculations, etc., required in connection with his work, but approval of same does not relieve him of his responsibility of complying with the requirements of the drawings and specifications. All transcription is on samples and drawings furnished by the underscriber.

2. At any time any controversy shall arise between the contractor and the subcontractor with regard to any matter or thing involved in this subcontract, and which the parties hereto do not promptly adjust and settle, or which the owner or the architect may deem it expedient to refer to the arbitration of their mutual friends, then the parties hereto shall submit the same to the arbitration of three persons, to be named by the parties hereto, and the decision of the majority shall be final and binding upon the parties hereto.



A-9



31. The subcontractor shall not place on the work any equipment of which he is not the owner unless he obtains written permission from the contractor.
32. When labor only is furnished by the subcontractor, subcontractor agrees to use contractor's material without waste, and agrees to pay for any material handled or damaged on account of negligence or carelessness. Unless otherwise stated, when material is furnished by contractor, same shall be delivered to the curb line of the building which shall constitute delivery. Quantities of material used daily shall be reported to contractor's superintendent, and singly loads dumped and placed at contractor's expense.
33. The subcontractor agrees to cooperate to the fullest extent with contractor's superintendents in charge, and further agrees to remove any workmen immediately that are not satisfactory to contractor or architect.
34. If the project is government or government aid, it is agreed that all requirements with regard to labor priority, maximum hours of labor, scales of wages to all skilled, semi-skilled, and unskilled workmen, and the method of payment or any other provision, and be limited. Everything required of the subcontractor in this connection is applicable to this subcontract.
- Any and all certificates of compliance required by the government will be furnished on demand.
35. Each subcontractor must insure on a form provided by the contractor a list of all subcontractor's employees of labor and materials whose operations he has used in the preparation of his bid and whose services he proposes to use in construction of the project.
36. The subcontractor is an independent contractor under the terms of this contract, notwithstanding the fact that the contractor reserves the right to supervise the work and to make suggestions relative to the satisfactory completion thereof.
37. Time is of the essence of this contract.
38. The subcontractor hereby warrants to the contractor that he is, and will comply, to the course of this contract, with all Federal, State and local laws and applicable country ordinances relating to workmen's compensation insurance, safety and health, wage and hour laws, state laws and use laws, Federal safety and transportation laws, local building and zoning codes and federal and state workmen's laws, and any fine or penalty assessed against the contractor caused by violation same by the subcontractor shall be paid by the subcontractor.
39. Subcontractor hereby agrees to defend at its own cost and to indemnify and hold harmless the contractor, its agents and employees from any and all liability, damages, losses, claims and expenses, however caused, resulting directly or indirectly from or connected with the performance of this agreement irrespective of whether such liability, damages, losses, claims and/or expenses were actually or allegedly caused through the negligence of contractor or any of its agents, employees or other subcontractors, excepting only such liability, damages, losses, claims and expenses as shall have been established by the use negligence of the contractor, its agents and employees.
40. Although drawn by the contractor, this agreement shall, in the event of any dispute over its meaning or application, be interpreted fairly and reasonably and neither more nor less for or against either party.

41. Notwithstanding all other provisions of this subcontract, Subcontractor agrees to submit partial payment requests in such form and copy as Contractor may require, and to deliver same to Contractor's general office by the twenty-fifth (25th) day of the month. Subcontractor agrees that his monthly partial payment request will include only work and materials in place or delivered to the site or stored off-site under conditions satisfactory to the Contractor prior to the last day of the month. Monthly partial payments are due not later than thirty (30) days after due date for partial payment requests and shall be made within five (5) days of receipt of payment from the Owner. When final payment is due, Subcontractor shall submit invoice for final payment, clearly marked "Final Payment".

42. Subcontractor shall be responsible for clean-up of rubbish and debris resulting from his work on a daily basis, all as verbally directed by the general contractor.

43. Subcontractor agrees that, in the event of any picket or other form of labor dispute at the construction site, whether that dispute or picket is in connection with the Contractor, Subcontractor, or any other contractor or subcontractor on this construction site, Subcontractor will continue to perform the work required herein without interruption or delay. In the event Subcontractor fails to continue the performance of the work included herein, without interruption or delay, because of such picket or other form of labor dispute, the rights accorded the Contractor by Provision #19 elsewhere herein shall apply.



ORIGINAL CERTIFICATE OF INSURANCE

7/23/84

PRODUCER

☒ The Linden Company
10 Lakeside Lane, #109
Denver, Colorado 80212

RECEIVED

JUL 26 1984

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT ALTER, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER **A** Transportation Insurance Co.

COMPANY LETTER **B** Ranger Insurance Company

COMPANY LETTER **C**

COMPANY LETTER **D**

COMPANY LETTER **E**

INSURED

Walter Plumbing Company

COVERAGES

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES.

CO LN	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECT DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIABILITY LIMITS IN THOUSANDS		
					Each Occurrence	Aggregate	
A	GENERAL LIABILITY	TBP042093546	9/1/83	9/1/84	BODY INJURY	\$ 500	\$ 500
	<input checked="" type="checkbox"/> COMPREHENSIVE FORM				PROPERTY DAMAGE	\$ 250	\$ 250
	<input checked="" type="checkbox"/> PREMISES/OPERATIONS				BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> UNDERGROUND EXPLOSION & COLLAPSE HAZARD				PERSONAL INJURY	\$	\$ 500
	<input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS						
	<input checked="" type="checkbox"/> CONTRACTUAL						
	<input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS						
A	SPREAD FORM PROPERTY DAMAGE	BUA042093577	9/1/83	9/1/84	BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> PERSONAL INJURY				BI & PD COMBINED	\$	\$
	AUTOMOBILE LIABILITY				BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> ANY AUTO				BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> ALL OWNED AUTOS (OWN. PRIN.)				BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> ALL OWNED AUTOS (OTHER THAN OWN. PRIN.)				BI & PD COMBINED	\$	\$
	<input checked="" type="checkbox"/> HIRED AUTOS				BI & PD COMBINED	\$	\$
A	NON-OWNED AUTOS	To Be Determined	7/1/84	7/1/85	BI & PD COMBINED	\$ 1000	\$ 1000
	<input checked="" type="checkbox"/> GARAGE LIABILITY				BI & PD COMBINED	\$ 1000	\$ 1000
	EXCESS LIABILITY				BI & PD COMBINED	\$ 1000	\$ 1000
	<input checked="" type="checkbox"/> UMBRELLA FORM				BI & PD COMBINED	\$ 1000	\$ 1000
	OTHER THAN UMBRELLA FORM				BI & PD COMBINED	\$ 1000	\$ 1000
	WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				BI & PD COMBINED	\$ 1000	\$ 1000
	OTHER				BI & PD COMBINED	\$ 1000	\$ 1000

DESCRIPTION OF OPERATION/LOCATION/SPECIAL ITEMS

Bank of Westminster

CERTIFICATE HOLDER

Walters C.M.
7951 East Maplewood Ave., Suite 200
Englewood, Colorado 80111

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL endeavor TO MAIL A 30-DAY WRITTEN NOTICE TO THE CERTIFICATE HOLDER PRIOR TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL BECOME NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Robert Ann Storkel



CERTIFICATE OF INSURANCE
issued by the
STATE COMPENSATION INSURANCE FUND
950 BROADWAY
DENVER, COLORADO 80203
DENVER PHONE: (303) 866-2658



TO WHOM IT MAY CONCERN:

This is to certify that this department has issued a Standard Workmen's Compensation and Employer's Liability Policy as described below covering the liability imposed upon subject employers by the Workmen's Compensation Act of Colorado, said policy being in good standing as of this date.

POLICY NUMBER: 055 -0 AUGUST 23, 1984

POLICY PERIOD: JULY 1, 1984 to JULY 1, 1985

INSURED: PLUMBING CO

DATE OF ORIGINAL ISSUE: AUGUST 9, 1968

QUARTERLY ADJUSTMENT

.. FOR ADDITIONAL COPIES, THIS CERTIFICATE MAY BE REPRODUCED. ..

All policies are subject to the following provision of the Workmen's Compensation Act with respect to cancellation:

Section 8-54-114. If any employer shall be in arrears for more than twenty days in any payment required to be made by him to the State Compensation Insurance Fund as provided by this Act, he shall by virtue of such arrangement be in default of such payment and any policy issued to him by said Fund shall thereupon be cancelled without notice as of the effective date or renewal date of said policy.

STATE COMPENSATION INSURANCE FUND

Joyce Meyers
JOYCE MEYERS, ADMINISTRATIVE CLERK

01041P1 FCHM 80267 07-19-84

Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # 844-0000
SQ FT 250,000
09/24/84
Level 1 Report

Code	Description	Labor	Material	Subs/oth	Total	\$/SF
.1	ARCHITECTURAL/STRUCTURAL			7692728	7,692,728	30.77
.2	MECHANICAL SYSTEMS			3498150	3,498,150	13.99
.3	ELECTRICAL SYSTEMS			2972900	2,972,900	11.89
.4	SPECIAL SYSTEMS					
.5	SPECIAL EQUIPMENT					
.6	SPECIAL FINISHES					
.7	SITework/UTILITIES			1372340	1,372,340	5.49
.8	GENERAL CONDITIONS			805269	805,269	3.22
.9	DESIGN OVERHEAD			1360000	1,360,000	5.44
1.0	PERFORMANCE BOND			78057	78,057	.31
1.1	DESIGN/BUILD FEE			450000	450,000	1.80
Project Total				18229444	18,229,444	72.92

Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # B44-0000
SQ FT 230,000
09/24/84
Level 2 Report

Code	Description	Labor	Material	Subs/oth	Total	\$/SF
.1 ARCHITECTURAL/STRUCTURAL						
.101	Clear at Building			305852	305,852	1.22
.102	Foundation System			342764	342,764	1.37
.103	Structural System			2274730	2,274,730	9.10
.104	Slab-On-Ground			247034	247,034	.99
.105	Roofing System			296367	296,367	1.19
.106	Exterior Walls			1589940	1,589,940	6.36
.107	Vertical Circulation			236500	236,500	.95
.108	Interior Walls			625669	625,669	2.50
.109	Floor Finishes			1160818	1,160,818	4.64
.110	Ceiling Finishes			298240	298,240	1.19
.111	Wall & Column Finishes			185844	185,844	.74
.112	Specialty Items			128970	128,970	.52
TOTAL				7692728	7,692,728	30.77
.2 MECHANICAL SYSTEMS						
.201	Heating, Vent & A.C.			2921050	2,921,050	11.68
.202	Plumbing System			350200	350,200	1.40
.203	Fire Protection System			226900	226,900	.91
.204	Control System					
.205	Special Mechanical					
.206	Temporary Heating					
TOTAL				3498150	3,498,150	13.99
.3 ELECTRICAL SYSTEMS						
.301	Fixtures & Lamps					
.302	Circuits & Devices					
.303	Main Feeders & Secondary					
.304	Switchgear & Transformer					
.305	Special Electrical					
.306	Temporary Electrical					
.307	Electrical Complete			2972900	2,972,900	11.89
TOTAL				2972900	2,972,900	11.89

Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # 844-0000
SQ FT 250,000
09/24/84
Level 3 Report

AC	Description	Quan.	UN	Labor	Material	Subs/oth	Total
.101 Clear at Building							
	Clear&Grub @ Bldg.	2000.00	CY			.50	1,000
	Mass Bldg. Excav.	26000.00	CY			2.50	65,000
	Grade Beam Excav.	2100.00	CY			4.00	8,400
	Elev. Pit Excav.	60.00	CY			8.00	480
	Column Cap Excav.		CY				
	Backfill & Compact	11394.00	CY			8.50	96,847
	4Ft. Struct. Fill	15852.00	CY			6.00	95,112
	Soil Investigation						
	Compaction Tests	20.00	EA			150.00	3,000
	Perimeter Drainage	2000.00	LF			16.00	32,000
	Under Floor Drain		LF				
	Clean Walks/Street	1.00	LS			1200.00	1,200
	Cooling Tower Sump	192.00	CY			8.00	1,536
	Reces'd.Chiller Rm	510.00	CY			2.50	1,275
	TOTAL					305852	305,852

.102 Foundation System							
	18" Drilled Piers	16.00	EA			700.00	11,200
	30" Drilled Piers	158.00	EA			1050.00	165,900
	36" Drilled Piers		EA				
	Pilasters @ Wall	58.00	EA			300.00	17,400
	Pier Caps		EA				
	Equip. Curbs	3500.00	Sf			5.00	17,500
	Grade Beams	7200.00	SF			11.50	82,800
	Sump Pits	1.00	EA			500.00	500
	Cooling Tower Sump	600.00	SF			11.50	6,900
	Elevator Pits	467.00	SF			11.50	5,371
	Waterproofing	20200.00	SF			.60	12,120
	Perim. Insulation	1260.00	SF			.80	1,008
	Winter Protection	1.00	LS			12000.00	12,000
	Cool Tower Fndn.	130.00	SF			11.50	1,495
	Generator Pad	1200.00	SF			3.75	4,500
	Transformer Pad	72.00	SF			3.75	270
	Concrete Testing	1.00	LS			2000.00	2,000
	Pier Inspection	3.00	WK			600.00	1,800
	TOTAL					342764	342,764

.103 Structural System							
	Structural Steel	1000.00	TN			1050.00	1,050,000

- 1 -

FIG. 8

A-15

August 15, 1984

Mr.
Plumbing Company

Re: Private Road Improvements
Hyland Office Park

Dear Tom:

This is to confirm our telephone conversations regarding Walters CM personnel performing work on the storm inlets (5 each) and the storm drain RCP.

As per our discussion of August 10, 1984 Walters CM shall construct the 10 ft. and 5 ft. inlets. The manhole rings, ladder rungs and grates will be provided by _____ and installed by Walters CM. Excavation and backfill shall be by _____. The amount charged to _____ for this work shall be cost of the work plus 7% and shall in no case exceed \$2,016.00 per each.

The storm drain line RCP shall be installed with our laborers at an hourly rate of \$11.70, \$12.35, and \$13.33 which includes all payroll taxes, etc. All equipment and material for this portion of the work shall be provided by _____ Plumbing.

Upon Completion of the work, a Change Order to your contract or a Backcharge will be executed to finalize this agreement.

Should you have questions, please contact the undersigned.

Very truly yours,

WALTERS CONSTRUCTION MANAGEMENT, INC.


John K. Fox, Jr.
Project Manager

JKF/jpl

cc: 3700-3710



WaltersCM

A Bill Walters
Company

7961 East Maplewood Avenue, Suite 300, Englewood, Colorado 80111, (303) 779-4329



NOTIFICATION OF BACKCHARGE

SUBCONTRACTOR: _____ Date 8-27-84 Project Private Road Improvement
 Plumbing Company Subcontract Date 8-27-84 2 Hyland Office Park

Subcontract # 3710-2505

Backcharge Cost Code 19000

Cost Code Description Utilities

Gentlemen:

Under the terms of the above referenced subcontract agreement, Paragraphs 19, 21, & 24, Walters CM is exercising its right and proceeding with the following work:

Per mutual agreement of both parties - Barmekow Construction will provide P & H tracked
backhoe for the purpose of excavating the water and sewer lines for Plumbing.

The cost of \$60 per hour standard rate shall be deducted from the Contract for all
tickets signed by Walters CM and Plumbing.

The above work is being completed on a time & material basis. Upon completion, a formal backcharge to your subcontract will be issued. The backcharge will be supported with documented costs.

Bill L. Walters, Construction Management, Inc.

By [Signature]
John K. Fox, Jr./Project Manager

JKF/jpi

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

WCM-000 8/23/84

APPENDIX B

DAILY LOGS



DAILY LOG

PROJECT Hwy 100 Bank - Bank of Westminster DATE 7-23-84

WEATHER CONDITIONS

Temperature: High 95 Low
Precipitation: Inches Rain Snow
Condition: Clear X Partly Cloudy Overcast SIGNATURE Ray 20 May

SAFETY

Accidents: Personal Equipment Public Liability Property Damage
Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No Men
1 SURVEY CREW	- 2
2 WCM	- 5
3	
4	
5	
6	
7	
8	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
BACKHOE LOADER RENT	7/23	7/23	POWER RENTAL	Remove Fence

- 1) Removed SPLIT RAIL & STOCKADE FENCE. - fence to Anna; Road to yard
 - 2) Removed 5 SIGNS
 - 3) Removed VALVE BOXES, CHECK VALVES, SPRINKLER HEADS
 - 4) 11:00 Tom O'DONNELL MEETING ON SITE WORK. SCHEDULE 7/30/84
 - 5) SURVEYORS SET STATIONS; CUT & FILL ON PERMANENT ROAD.
 - 6) BLUE STAKES, CABLE, PHONE, GAS, ELECTRIC SHOWED UP. Locations O.K.
 - 7) CALLED REPTON LANDSCAPE. DIDN'T SHOW UP TODAY.
 - 8) TALKED TO MURPHY EXCAVATION. CONFIRM WEDNESDAY START.
 - 9) WCM YARD - USED 2 TRUCKS 8 HRS FROM HARPER FOR FENCE removal - Hauled fence to Anna.
 - 10) WORKED CREW 8 HRS.
 - 11) Removed 1 flagpole - To yard
 - 12) Removed 4 curb wheel stops - Hauled to yard
- JE/BM PAUL/BM KATH/BM BRIAN/BM ED/BM

WCM-015

WOTE - Project Manager

CANARY - Superintendent



DAILY LOG

PROJECT WESTMINSTER BANK DATE 7-30-84

WEATHER CONDITIONS

Temperature: High 95 Low 62
Precipitation: Inches 0 Rain 0 Snow 0
Condition: Clear X Partly Cloudy X Overcast 0SIGNATURE Ray D. Ford

SAFETY

Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0
Explain: 0

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No Men

Cost Code	Ticket No.	Company	No Men
		1. WCM - 2	00000000 - 1 - 4MAN
		2. SUEVY - 2 HALF DAY	1 - LAB
		3. Murphy - BLADE/OPER	1 - BACKHOE
		4. 613 /OPER	
		5. 946 LEADER/OPER	
		6. SHOOT 1/2 DAY	
		7. 780 LEADER 1/4 DAY	
		8.	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) WASSANNA SHOWED UP FOR COMPLETION TEST.
- 2) O'DONNELL SHOWED UP. JUST MOVED PIPE IN. REMOVED 30' LF OF EXISTING 18" RCP @ 92. 8" AMERICAN BRACKET OUT LITTLE JO HOC, THAT ARE BRINGING OUT A TRUCK HOC.
- 3) TALKED TO AL WASSANNA ON USING SOURCE IN A CONFINED TRENCH FOR UTILITY WORK. NO PROBLEM AS LONG AS IT DOESN'T RAIN INTO THE BUILDING.
- 4) FRED MURPHY HAS 8 HRS EXTRA ON 146 BLADE FOR BRINGING IN EXTRA FILL IN ROAD DUE TO SURVEY PROBLEMS ON GRADE.
- 5) EXISTING DETENTION POND ON CORNER NEEDS TO BE MUCKED OUT. USING BARNHORN BACKHOE. CHEAPER THAN MURPHY. MURPHY WANTED \$105/HOUR; \$210 MONTH. JOHN BARNHORN \$60/HR.
- 6) AL WASSANNA APPEARS USING ASPHALT IN FILL @ DETENTION POND.
- 7) STARTED TO DISRUPT TRAFFIC ON TEMPORARY ROAD AND TEAR UP BLDG. SITE. ON SCHEDULE FOR CAISSONS ON MONDAY.
- 8) WE HAVE EXPOSED PATH EVERY NIGHT FOR TEST WORK. REAL PROBLEM WITH EXISTING DETENTION POND. BUILDING CORNER RIGHT OVER POND.

WCM-018

WCM - Project Manager

CANARY - Superintendent



DAILY LOG

PROJECT WESTMINSTER BANK DATE 8/6/84 MONDAY

WEATHER CONDITIONS

Temperature: High 90 Low 60
Precipitation: Inches 0.2" Rain X Snow _____
Condition: Clear _____ Partly Cloudy YES Overcast _____SIGNATURE Ray Z. O'Toole

SAFETY

Accidents: Personal _____ Equipment _____ Public Liability _____ Property Damage _____
Explain: _____

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No. Men

1. MEREDITH - 216/2 OPER
2. WCM - 6
3. SUEVEY - 2
4. DENVER REEL - 3
5. O'DONNELL - 1-4 MAX
6. 3-LAB
7.
8. 1-OPER/HO2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
<u>NONE</u>				

1) STARTED CAISSONS.	DIAMETER	LOCATION	DEPTH LENGTH	CONCRETE
<u>MEREDITH.</u>	<u>36"</u>	<u>3-B-G</u>	<u>30'</u>	<u>7.51</u>
	<u>36"</u>	<u>5-G</u>	<u>30'</u>	<u>7.51</u>
	<u>36"</u>	<u>8-G</u>	<u>32'</u>	<u>8.16</u>
	<u>36"</u>	<u>10-G</u>	<u>32'</u>	<u>8.16</u>
	<u>30"</u>	<u>10-D</u>	<u>31'</u>	<u>5.09</u>
	<u>30"</u>	<u>10-G</u>	<u>32'</u>	<u>5.18</u>
	<u>TOTAL</u>		<u>188' LF</u>	<u>41.61 CY</u>

- 2) POURED 44' CY. 5% W/200.
- 3) DENVER REEL 3/4 DIA WITH CAISSON CAGES.
- 4) TALKED TO MURPHY ON GETTING LOADER OUT HERE. PROBLEM THURSDAY IS BEST. NEXT WEDNESDAY.
- 5) O'DONNELL ON 8" SANITARY UP TO MANHOLE #5.

WCM-018

WHITE - Project Manager

CAGARY - Superintendent



DAILY LOG

PROJECT WESTMINSTER BANK DATE 8/13/89

WEATHER CONDITIONS
 Temperature: High 95 Low 60
 Precipitation: Inches 0 Rain 0 Snow 0
 Condition: Clear 95 Partly Cloudy 0 Overcast 0

SIGNATURE Page O'Neil

SAFETY
 Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0
 Explain: 0

MATERIALS

SUBCONTRACTORS

Cost Code _____ Ticket No. _____

Company _____ No. Men _____
 1. WCM-6 _____
 2. SUEWY-2 _____
 3. O'DONNELL - 1-9MAN
 4. 3-CAS
 5. 1-OPER/MAN
 6. MCDONNELL - 1-9MAN
 7. 1-216/OPER
 8. 1-0162

Denver Rep - 3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) HELD SAFETY MEETING.	DIA	LOCATION	TIME/DATE	EST. CONCRETE
2) MCDONNELL ON STM DAY OF DRILLING.	36"	1-E	27 ¹ / ₂	7.21
DUE THE 4-MAN BACK ON JOB.	36"	1-F	27 ¹ / ₂	7.08
3) O'DONNELL ON 12" WATER. UP TO STATION	24"	PLAZA	17-	2.50
4'240. DISCUSSED STARTING 15" RCP	24"	PLAZA	18-	2.70
STORM ON WEDNESDAY NO HANDWORK SO	24"	PLAZA	17 ¹ / ₂	2.60
WORKING OUT A DEAL WITH OUR	24"	2-E	16-	1.90
LADDER FOR DOING WORK.	42"	4-D	30 ¹ / ₂	13.60
4) TALKED TO SUBURBAN ON CONCRETE.	34"	3-D	33 ¹ / ₂	8.70
CONSISTENCY. SLUMP & AIR CHANGE.	TOTALS → 194 ¹ / ₂			46.29
Need a CLEAN MIXED DRUMS. YIELD				
PER TRUCK RUNNING SHORT.				
5) ORDERED FOR PIPES FOR INLETS FROM				
CONCRETE. DELIVERY A.M. ON 8/26/89.				

**WaltersCM**A Bill L. Walters
Company

7851 East Westwood Avenue, Suite 300, Englewood, Colorado 80111, (303) 770-4300

H66

DAILY LOGPROJECT Westridge Park DATE AUGUST 28, 1988

WEATHER CONDITIONS

Temperature: High 90 Low 60
Precipitation: Inches 0 Rain 0 Snow 0
Condition: Clear 100 Partly Cloudy 0 Overcast 0SIGNATURE [Signature]

SAFETY

Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0
Explain: 0

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No. Men
1 O'DONNELL - 1-9 MAN	
2 1-CAB	
3 2-Hop/loper	
4 WCM - 8	
5 FORMWORKERS - 4	
6 D&D - 8	
7	
8	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) DID STARTED CURB & GUTTER. POURED 400 LF
- 2) STARTED BACKFILL ON TIE BEAMS.
- 3) POURED 52 CY ON TIE BEAMS @ TOWER 1 & ELEVATION.
- 4) Reviewed Schedule with Murphy. Says no problem but will have to be hard to nail MURPHY TO A SCHEDULE. TRY USING SPEED MEMOS.
- 5) O'Donnell Tying in Check valve & Pipe by hand. No problem yet. Should be finished up & staged in by Wednesday.
- 6) Scheduled VAULT Steel For DELIVERY ON 8/29 @ 7:00.
- 7) O'Donnell IS USING OUR LADDER FOR BACKFILL AROUND THE INLETS.

WCM-015

WHITE - Project Manager

CANARY - Superintendent



DAILY LOG

PROJECT WESTMUSZER BANK DATE 9/4/84

WEATHER CONDITIONS

Temperature: High 85 Low 50
Precipitation: Rain - Snow -
Condition: Clear YES Partly Cloudy - Overcast -SIGNATURE Ben D. O'Neil

SAFETY

Accidents: Personal - Equipment - Public Liability - Property Damage -
Explain: -

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No. Men

1. WCM - 8
2. O'DONNELL - 1 - 4 MAN
3. 2 - OPER/HOR
4. 2 - LAB
5. DTD - 4
6. MURPHY - 1 - OPER/CLERK
7. 1 - LEADER/OPER 1/2 DAY
8. FORM BUILDERS - 4

Denver Rec - 2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) Started 12" cut @ 92m & finished at 8:30. Half done just road base, we will pour Wednesday found abandoned phone cable & unmapped electric utilities.
- 2) Rough dirt down gravel divide & back on north side of road. Worked 8 HRS. Rough gravel up with divide @ 10:00. Loads @ 10:30 loads back down @ 12:30. No loads the rest of the day.
- 3) O'Donnell abating materials in road
- 4) Schedule back down pour on two half of balling for Thursday @ 12:00
- 5) Ridge Corp inspector showed up to resolve well @ 1:42 behind back road. No answer yet as to procedure. Talking about grades.
- 6) Backfilled grade down & tie down.
- 7)

WCM-018

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A Bill L. Walters
Company

7851 East Mississippi Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

9/12

DAILY LOGPROJECT WESTMINSTER BANK DATE 9/10/87

WEATHER CONDITIONS

Temperature: High 85 Low 60
Precipitation: Inches — Rain — Snow —
Condition: Clear (CS) Partly Cloudy — Overcast —

SIGNATURE

Raymond J. O'Neil

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —
Explain: —

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No. Men

Cost Code	Ticket No.	Company	No. Men
		1. WCM-B	RIVERA-1
		2. O'DONNELL - 1-MAN	
		3. 1-LAB	
		4. 2-HA/OPTR	
		5. STRESSCON - 4	
		6. MURPHY - 1-Loader/OPTR	
		7. FORM BUILDERS - 4	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) CORING COMPANY SHOWED UP @ 8:30. JOHN CARLSON ALSO. FINISH DRILLING HOLES @ TIE BEAMS FOR STRESSCON.
- 2) STRESSCON STARTED TRUCK & CRANE READY @ 8:00.
- 3) MURPHY - 2 TRUCKS TO HAUL EXCESS DET. LOADER.
- 4) SHIFTED TRAFFIC ON PERMANENT ROAD.
- 5) TALKED TO HANCOCK (CORN). SCHEDULE FOR 9/17. NEED SHOP DWGS APPROVED.
- 6) SCHEDULED FOR BANK VAULT FLOOR POUR ON TUESDAY.
- 7) POSSIBLE LOW CONCRETE BREAKS @ TIE BEAM FOR ELEVATOR & STAIR #1. POSSIBLY BREAK & TEAR OUT. WILL KNOW ON TUESDAY.
- 8) STRESSCON SET 8 PIECES.
- 9) REBAR FOR STRUCTURAL PLATE SHOWED UP. WCM UNLOADED.
- 10) POWER WALLS FOR TYPE R 10' INLET ON SHERIDAN.
- 11) TALKED TO MURPHY ABOUT SMALL BACKHOE LOADER FOR JOB, SAID ONE WASN'T AVAILABLE.
- 12) MEL HOPPER O'DONNELL FINISH' MANHOLES.
- 13) DAVE FROM STRESSCON @ 3:00 DRIVING VAULT STEEL.

WCM-016

WHITE - Project Manager

CANNARY - Superintendent

**Walters CM**A Bill L Walters
Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 779-4300

98

DAILY LOGPROJECT WESTMINSTER BANK DATE 9-14-84

WEATHER CONDITIONS

Temperature: High Low
Precipitation: Inches Rain Snow
Condition: Clear Partly Cloudy Yes Overcast YesSIGNATURE Page 2 of 2

SAFETY

Accidents: Personal Equipment Public Liability Property Damage
Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No. Men
1. WCM - 8	
2. Denny R. - 3 - 2 HRS	
3. MURPHY - 1 - Loader/oper	
4. ? - 2 Tandems	
5. RIVIERA - 1	
7. STRESSCON - 4	
8. FORM BUILDERS - 3	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) Denny R. STARTED TIEING VAULT WALL STEEL. FOUR VAULT ON 9/18.
- 2) FORM 4 BAY TIEING SLAB @ CORNERS ON 1ST FLOOR TO BE ABLE TO START BRICK WORK.
- 3) 8927448 Car number (Westminster Police). POLICE STOPPED BY AND SAID ASSISTED 2 PEOPLE ON PICKING UP WCM CONES AND BARRICADES.
- 4) ZIG ZAG DID 4 - 4"X10" CORES @ TIE BEAMS. 9:30-12:00 WASSNAAR WILL PICK THEM UP. WASSNAAR PICKED UP CYLINDERS @ 12:30.
- 5) MEL GRANTING DOWELS & HOLES IN TIE BEAM FOR STRESSCON.
- 6) NORTHWESTERN DOING BACKFILL FOR O'DONNELL ON STORM EAST SIDE.
- 7) CALLED NORTASTAR, O'DONNELL, RIVIERA, HELM, HEAT POWER, ON SCHEDULE FOR BLDG TIEING SLABS START 10/1, POF ON BLDG 10-15.
- 8) TOLD TO Denny R. on setting alarm in parking lot. Schedule for 9-17.
- 9) SCHEDULED TO POUR LIGHT POLE BASES ON 9-21.
- 10) RIVIERA SET TEMPORARY POWER TO BLDG 220 3 PHASE.
- 11) WEATHER COLD, LIKE WINTER.
- 12) POUR 2 - 4'X4'3 DIAPHS @ STRUCTURAL PLAZA.

WCM-816

WATE - Project Manager

CANARY - Superintendent



WaltersCM

A Bill Walters
Company

7881 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111 (303) 770-4300

DAILY LOG

PROJECT WEXMUNSTER PARK

DATE September 20, 1994

WEATHER CONDITIONS

SIGNATURE Raymond

Temperature: High _____ Low _____
Precipitation: Inches _____ Rain _____ Snow _____
Condition: Clear _____ Partly Cloudy _____ Overcast _____

SAFETY

Accidents: Personal _____ Equipment _____ Public Liability _____ Property Damage _____
Explain: _____

MATERIALS

Cost Code

Ticket No

SUBCONTRACTORS

Company

MURPHY: 1 - Hot / No Men
1 - Labor / opp
1 - Coker / opp

1 WCM-8
2 D&D-5
3 B&M-2
4 STECKOM-4
5 HEAT/POWER-2
6
7
8

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) D&D DRINK CURB & GUTTER & CROSSPAWS FROM STATION 6+00 TO 9+00. AHW HAS A BUSY PROBLEM IN THE CURB & GUTTER. HAD A BUSY TO BE CUT OUT. D&D STARTED 2 8+00 WORKING BACK TO 6+00.
- 2) BUREAU DRIVED 7 LIGHT POLE BASES. DRIVED FROM 9:00 TO 10:30. CONCRETE CAME @ 11:00. SCY. ELECTRICIANS SET CONDUIT & BOLT PATTERNS AND AHW SQUY (CREEK) SITUATED BOLT SO LIGHTS FACE THE RIGHT WAY.
- 3) MURPHY STILL BEHIND ON PAVING DIRT BLADE SCHEDULED TO COME IN ON 9-24 MONDAY. BACKLOGGED STRUCTURAL PLAZA.
- 4) B&M MASONRY SETTING UP SCAFFOLD ON 10 LINE. HAVING PROBLEM WITH THEIR DELIVERY ON THEIR MORTAR COLOR. ~~BEHIND~~ 1 DAY BEHIND.
- 5) STECKOM WAS SUPPOSE TO BE TO 2 LINE ON NORTH SIDE TODAY. WON'T BE UNTIL TOMORROW. THEY ARE 1 DAY BEHIND. 2 DAYS.
- 6) DODGE REEL IS TIEING UP VAULT ROOF STEEL THEN THEY WILL MOVE OVER TO STRUCTURAL PLAZA.
- 7) TALKED TO H&M (ALL MARCONI) ON SCHEDULE. M&M. CURB IN 10-1. WILL BE MEETING WITH THEM ON 9-29.
- 8) MET WITH AHW SURVEYING ON '898 BACKCHARGE. EVERYTHING WORKED OUT ON HANDLING BACKCHARGES. NO BACKCHARGE.

**WaltersCM**A Bill L. Walters
Company

7881 East Hampden Avenue, Suite 202, Englewood, Colorado 80111 (303) 770-4300

DAILY LOGPROJECT WESTMINSTER BANK DATE 10-3-84WEATHER CONDITIONS SIGNATURE RaymondTemperature High 75 Low 30
Precipitation Inches Rain Snow
Condition Clear Partly Cloudy YES Overcast **SAFETY**Accidents: Personal Equipment Public Liability Property Damage
Explain: **MATERIALS**

Cost Code

Ticket No.

SUBCONTRACTORS

Company

1 BENCH-9	MURPHY-1-LOADS/OPER
2 WCM-11	1-BLADE/OPER
3 40'DANIEL-3	
4 HEAT/POWER-1	DID-3
5 STRESSCAN-4	HELM-3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) PUT IN SCUPPER FOR RAMP ON 10 LINE. 2 BRKS HIGH & 2 BRKS LONG, 9" OFF OF TWIN TEE IN CENTER OF WALL.
- 2) KOLH, BARRY, MCL WORKING IN PARKING LOT.
- 3) REST OF CREW GETTING 1ST FLOOR READY FOR A POUR.
- 4) 2 POURS FROM CHASE MANHATTAN BANK VISITED THE JOB SITE. SUMMED THEM AROUND COMMENCED HOW CLEAN JOB WOULD.
- 5) DID SHARP HAVE CURB & GUTTER IN PHASE 1 PARKING DONE.
- 6) HEAT/POWER HAS 4 GUYS SCHEDULED FOR THURSDAY.
- 7) TALKED TO ART WOOD OF SUBIRAN ON CONCRETE DESIGN FOR FLOOR TAPPING. WE ARE GOING TO A 5/2 SACK MIX WITH A PORTLAND ACCELERATOR.
- 8) JOHN WAS OUT THIS MORNING SAYING CHANGES TO BE MADE. NO LONGER WITH WALTERS. DAVE MCCALL PROJECT MANAGER.
- 9) TALKED TO BRANNON ON PARKING START TODAY & WORK SCHEDULE ALSO.
- 10) MAY HAVE TO WORK LATER LATE TO GET READY FOR 1ST FLOOR POUR. NO OVERTIME.
- 11) 3:30 STARTED TO RAIN. CHECK, MAY HAVE TO CANCEL PAVING @ PARKING LOT & 1ST FLOOR POUR.

WHITE - Project Manager

CAMART - Superintendent



DAILY LOG

PROJECT WESTMINSTER BANK DATE OCTOBER 8, 1984

WEATHER CONDITIONS

 Temperature: High 65 Low 35
 Precipitation: Inches — Rain — Snow —
 Condition: Clear — Partly Cloudy Yes Overcast —
SIGNATURE Raymond

SAFETY

 Accidents: Personal — Equipment — Public Liability — Property Damage —
 Explain: —

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No Men

1. WCM-11	MURPHY-0
2. O'DONNELL-2	HEAT/POWER-2
3. RUIVIERA-2	ANDERSON-2
5. DAD-22	
6. BENCH-10	
8. STRESSCON-4	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) SET UP FOR 1ST FLOOR POUR. PUMPER HERE @ 6:00. READY TO POUR. SUBURBAN HAD PROBLEMS WITH THE BATCH PLANT. CONCRETE DIDN'T SHOW UP UNTIL 8:15. SLUMP WAS BAD & CONCRETE TEMPERATURE WAS 65°. BACKCHARGE SUBURBAN. I TALKED TO MIKE.
- 2) FINISHED PUMPING @ 11:30. POURED 1ST FLOOR & STAIR TOWER & LANDINGS. 132 CY.
- 3) POURED BRANNON BACK UNTIL WEDNESDAY. SUBGRADE STILL TO WRT.
- 4) PUBLIC SERVICE SHOWED UP TO HOOK UP PERMANENT POWER THROUGH PARKING LOT.
- 5) PRECAST FINISHED UP- ON THE BUILDING. THEY SHOULD BE COMPLETELY DONE ON WEDNESDAY.
- 6) DAD POURED A ALL CURB & GUTTER FOR PHASE 1 PARKING. 8 CY

WCM-015

OWITE - Project Manager

CANARY - Superintendent



DAILY LOG

PROJECT Wetmorey Road DATE October 23, 1984

WEATHER CONDITIONS

Temperature: High 40° Low 25°
Precipitation: Inches _____ Rain _____ Snow _____
Condition: Clear _____ Partly Cloudy Yes Overcast _____SIGNATURE Don J. [unclear]

SAFETY

Accidents: Personal _____ Equipment _____ Public Liability _____ Property Damage _____
Explain: _____

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No. Men

1. WCM - 4
2. HELM - 1
3. _____
4. RIVERA - 1
5. O'DONNELL - 2
6. BERK - 4 HALF/DAY
7. _____
8. _____

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

- 1) Weather would not allow work until all day.
- 2) CARPENTERS CONTINUE WEATHER ENCLOSURES.
- 3) BERK WORKED HALF A DAY MOVING SCAFFOLD. THE GROUND IS TOO WET YET.
- 4) STILL HAVEN'T DONE ANY SITE WORK.
- 5) KEN GRANTED THE ROOF PERMITS.

WCM-015

WHITE - Project Manager

CANNARY - Superintendent



7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT Wabtrinter Bond DATE October 29, 1984

WEATHER CONDITIONS

Temperature: High 60 : Low 35
Precipitation: Inches — Rain — Snow —
Condition: Clear (P) Partly Cloudy — Overcast —

SIGNATURE

Page 2 of 2

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —
Explain: —

MATERIALS

Cost Code

Ticket No.

SUBCONTRACTORS

Company

No. Men

1. WCM - 7
2. O'DANNEIL - 3
3. RIVIERA - 2
4. HELM - 4
5. DERICH - 7
6. CBC - 6

- D & D - 20
Hert/Power - 1
BRUNDAGE - 1
AHW - 2 Half Day
KORINSTAR - 2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) O'DANNEIL TAPPED ROOF DRAINS INTO STORM ON EAST SIDE OF BLDG.
- 2) HELM Finishing duct supports on the roof.
- 3) Riviera doing rough ins on floors.
- 4) Novitex up on 3rd floor & 1st floor on rough ins.
- 5) Boonin on west side of the building and on the columns on the south side.
- 6) D & D Tapped off of 2ND Floor, LAST SECTION of 3RD Floor, South Canyon Drive, Stair Tower, 1 landing, elevator pit floor.
- 7) Total Pumping @ 7:00, finished @ 1:30, total 178 CF total for day.
- 8) Kevin was sick today.
- 9) AHW started packing out the roof.
- 10) CBC finished 2/3 of roof.
- 11) Called Moller on return credit for full 100 lb square lathe.
- 12) Called to Kevin Hester on picking up vital items.

WCM-213

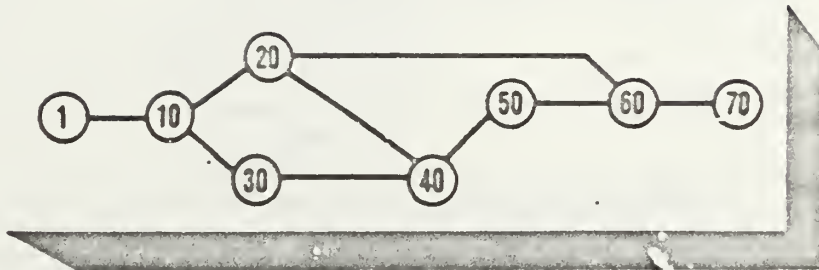
WHITE - Project Manager

CARARY - Superintendent

APPENDIX C
PROJECT MANAGEMENT SOFTWARE UTILIZED

PMS-II

THE MOST COMPLETE
PROJECT MANAGEMENT
SYSTEM . . .



NORTH AMERICA MICA, INC.



11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6996/Telex #791237 NAMICA UD

THE PROBLEM:

What do you do when . . . ?

The president of your company just assigned you the responsibility of managing the development of a new product that requires:

- Market verification
- Design feasibility
- Reliability certification
- Production facility design
- Pilot production run
- Conceptual design
- Prototype development
- Test marketing
- Facility construction

And you are expected to present a plan from beginning to end at the Board of Directors meeting in two weeks. Your plan must identify what resources will be needed and when, how much the project will cost, and when each of the major accomplishments will be ready for review. You are to use the available resources that are controlled by ten different department managers, and this project is to be scheduled around the current workload of the various departments. And, by the way, your bonus and next year's salary are dependent upon how quickly and inexpensively you can accomplish this assignment.

How are you going to approach this seemingly impossible task?

THE SOLUTION:

You need a systematic method for assembling your project into a dynamic network of interrelated activities. This network should be able to handle the complexities of your project, yet be simple to change. It should be able to present you with the current status of each activity in your project, and it should be able to tell you how each is doing against budget.

This systematic method should enable you to prepare the reports that the president wants, and it should allow you to identify what activities will be affected by a slip or a gain in another activity. Your project needs to be under the control of a Project Management System.

Maximum project control on a tight budget! Check these features.

PMS-II is a complete critical path network analyzer that will calculate the early start/finish and late start/finish dates, float time, and critical paths for project networks with up to 2700 activities.

You'll find PMS-II as easy to operate as it is profitable to use. The 100+ page user manual comes complete with a tutorial section to guide the first time user through the operation of the system. In just a few minutes you can have PMS-II solving your project problems.

FEATURES:

- U.S. and International date formats supported.
- Schedule based on a 2, 4, 5, 6, or 7 day work week.
- Scheduling around up to 100 holiday or non-work periods of up to 99 days in length.
- Three project management disciplines: 1) actual start/finish, 2) days remaining, and 3) percent complete. Since PMS-II maintains the data required for all three methods, you can switch from one mode to the other on the same project as conditions dictate.
- Optional desired finish date causes PMS-II also to process your project from desired finish to earliest start calculating "Time Float" for all activities.
- All mandatory and optional government contract reporting requirements as defined in the Corps of Engineers Project Management specifications ER-1-1-11 and DOD 7000-2, a real plus for those engaged in government contract work!
- Designed by experts in the field of user oriented software, PMS-II is extremely easy to operate. It is a "menu-driven" system with extensive editing and error checking features. PMS-II's calculation program even checks your network for logic errors and identifies broken activity chains.
- Speed — performing all calculations on a project network of 1000 activities in under 10 minutes. This rapid turn-around time affords you the luxury of playing out various "what if" scenarios until all dates and durations are fully optimized.
- Easily interfaced to your job cost system or dBASE II (tm) and other programming languages.

SUPPORT:

North America Mica provides each user with one year of free software and manual updates (PMS-II is now in its eighth enhanced release) as well as free phone-in consulting service on any PMS-II related question.

CAPACITY:

PMS-II determines the maximum number of activities per network by looking at the amount of free memory available. With 64K under the CP/M operating system, PMS-II will handle over 1250 activities. Under MP/M in a 40K user partition, PMS-II will allow about 700 activities, and under CP/M-86 or PC/MS DOS up to 2700 activities can be processed in 128K, with a hard disk or XT system.

PMS-II will manage 'n' number of projects or sub-projects depending on disk capacity. Sub-projects can be automatically linked to provide for an unlimited project size.

HARDWARE REQUIREMENTS:

- Any microcomputer system with at least 64K of memory, and
- 80 character by 24 line video display with addressable cursor, and erase to end-of-line, and
- A 132 column printer, character or dot-matrix (10 CPI on 14" paper, 16.7 CPI with 8" paper), and
- 600K of disk storage in 2 drives or a hard disk.

SOFTWARE REQUIREMENTS:

- CP/M (tm) (Ver. 2.2 or later), MP/M (tm), CPM-86 (tm), MSDOS (tm), or PC DOS (tm) operating systems.

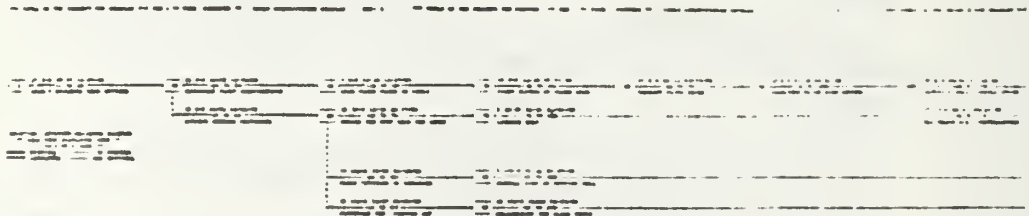
dBASE II IS A TRADEMARK OF ADITON-TATE. CPM & MP/M ARE TRADEMARKS OF DIGITAL RESEARCH.

Turn Projects Into Profits

With The Most Complete Set of Project

ACTIVITY-ON-ARC DIAGRAM —

- A graphic presentation of the logic of the activity network.
- Displays node numbers, description, and duration of each activity.
- Optionally prints the early start/finish or late start/finish dates.
- Highlights the Critical Path(s), In-Process, and completed activities.



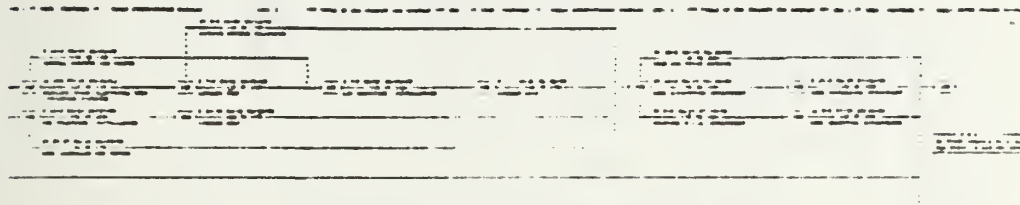
ACTIVITY REPORT — keystone of the system's reporting capabilities:

- Allows you to select primary, secondary, and/or tertiary sort from early start, early finish, late start, late finish, responsibility, cost 1, cost 2, float, job cost fields, or end node.
- You can select a range of values or a single value on any or all of the data fields to extract any subset of activities from your project.
- The report provides page breaks and can be printed on the major sort field at your option.
- You can optionally suppress the printing of the budgeted and actual dollar amounts.
- The activity status as of the report date (Can Start, Must Start, Late, Critical, Active, Complete, or Planned) is displayed for each activity.
- All of your planning parameters (i.e., burden rate, workdays per week, etc.), holidays, and calendar choices are summarized at the end of the report.
- A Schedule Only Report can be displayed on the screen.

Activity	Early Start	Early Finish	Late Start	Late Finish	Duration	Activity Name	Activity Description	Activity Status
1	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 1	ACTIVITY 1	Planned
2	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 2	ACTIVITY 2	Planned
3	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 3	ACTIVITY 3	Planned
4	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 4	ACTIVITY 4	Planned
5	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 5	ACTIVITY 5	Planned
6	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 6	ACTIVITY 6	Planned
7	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 7	ACTIVITY 7	Planned
8	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 8	ACTIVITY 8	Planned
9	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 9	ACTIVITY 9	Planned
10	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 10	ACTIVITY 10	Planned
11	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 11	ACTIVITY 11	Planned
12	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 12	ACTIVITY 12	Planned
13	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 13	ACTIVITY 13	Planned
14	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 14	ACTIVITY 14	Planned
15	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 15	ACTIVITY 15	Planned
16	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 16	ACTIVITY 16	Planned
17	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 17	ACTIVITY 17	Planned
18	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 18	ACTIVITY 18	Planned
19	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 19	ACTIVITY 19	Planned
20	00-00-00	00-00-00	00-00-00	00-00-00	00-00-00	ACTIVITY 20	ACTIVITY 20	Planned

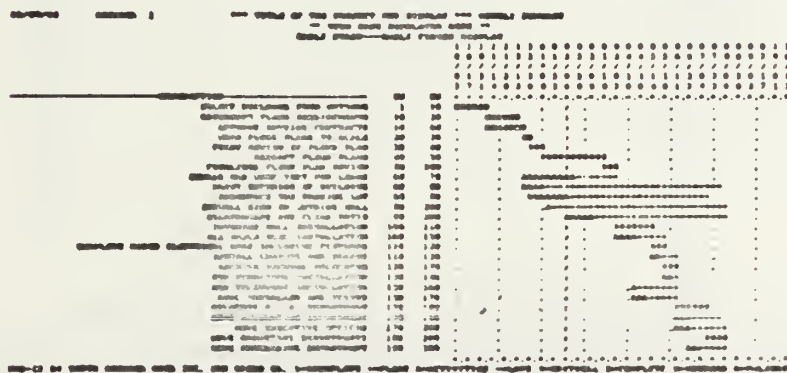
Reproduced from
best available copy.

Management Reports Ever Offered



GANTT OR BAR CHART --

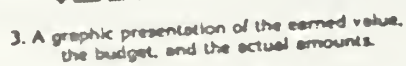
- Shows in graphic form the start and stop date, float time, and percent complete status for each activity.
- Shows the critical path(s).
- Gives you the same data sorting and selection options as the Activity Report.
- Allows you to define the symbols you want for Critical Path, Activity Time, Float Time, Late, and Percent Complete.
- Prints a vertical outline line under the report date which shows you what should be complete and what is still ahead.
- The holidays, non-work periods, and weekends are highlighted.
- You can select either a daily or weekly print format (weekly shown).



- For defense contractors working to DOD reg 7000.2
- Shows value of work budget vs accomplished vs actual cost for each activity
- Calculated earned value based upon percent complete or days remaining
- An outstanding management tool that is applicable to any project control situation.
- Report generated in three sections:

1. Value of work accomplished by activity as a function of budgeted amounts, percent complete, and actual.

2. Budgeted, earned, and actual amount by month for all activities.



- Shows in tabular and graphic form the total costs by month in 4 ways: 1) early finish basis, 2) late finish basis, 3) average of 1 and 2 (per Corps of Engineers specification ER 1111 reporting requirements), and 4) actual cost at actual start/finish.
- For activities that span more than one month, PMS-8 can put all the activity's dollars in the ending month or spread them over the duration of the activity.

02/07/84

VALUE/COST OF ACTIVITIES BY MONTH

PAGE 1

*** TITLE OF THE PROJECT FOR DISPLAY ***
 ** FOUR DATA DISPLAYED HERE **
 ALLOCATION METHOD = SPREAD ON MATERIAL LABOR DOLLARS

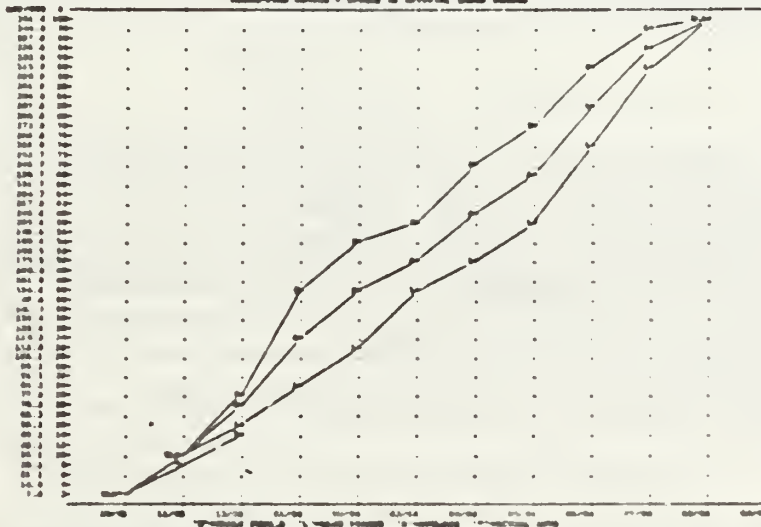
MONTH	EARLY FINISH			LATE FINISH			AVERAGE			ACTUAL		
	AMOUNT	ACCRD	TOTAL	AMOUNT	ACCRD	TOTAL	AMOUNT	ACCRD	TOTAL	AMOUNT	ACCRD	TOTAL
10/83	0700	0700	2.00	0700	0700	2.00	0700	0700	2.00	7703	7703	11.33
11/83	22216	30000	8.02	22216	30000	8.01	22216	30000	8.02	16407	20100	6.94
12/83	42004	70000	11.30	36732	57007	10.44	13000	66052	10.01	24150	40500	11.03
01/84	70130	130000	12.00	25214	42011	12.02	50074	110727	12.25	0	40500	12.03
02/84	30000	100000	11.27	30367	112270	12.27	13000	130111	12.77	0	40500	12.03
03/84	10000	301007	12.05	30363	151000	12.20	20514	170047	10.22	0	40500	12.03
04/84	30000	300730	10.50	10700	171423	10.04	20421	200000	10.71	0	40500	11.03
05/84	21300	371000	77.07	22275	203700	10.02	21770	217010	6.75	0	40500	12.03
06/84	40300	317230	10.00	14505	250205	75.56	40000	187767	10.00	0	40500	11.03
07/84	25000	300000	10.00	10000	317100	10.30	42200	130000	10.01	0	40500	12.03
08/84	7000	300000	10.77	13000	300700	10.05	13000	130011	10.73	0	40500	12.03

02/07/84

*** TITLE OF THE PROJECT FOR DISPLAY ***

PAGE 2

*** FOUR DATA DISPLAYED HERE ***
 ALLOCATION METHOD = SPREAD ON MATERIAL LABOR DOLLARS



Now, Do You Have The Resources To Accomplish The Schedule

RMS-II The Resource Management System For IBM With PMS-1

THE PROBLEM:

Your company has successfully used PMS-II to schedule and control many concurrent projects, but your project managers are experiencing unexpected delays and confusion because more than one of them has planned to utilize the same resource at the same time.

Often, critical activities within your project are discussed in detail with the department managers that will be providing the resource(s) required. They may assure you that your project will be "taken care of" only to find out when it is too late that they don't have enough resources to meet the schedule because the resource plans that were submitted for budget approval were in error! They're very sorry, but your project will now be delayed. All remaining activities will need to be renegotiated with all of the other departments and you can expect more of the unexpected.

THE SOLUTION:

Your company needs to use a systematic method for controlling the allocation of finite resources against the requirements of many competing projects. Your company needs RMS-II, the Resource Management System for PMS-II.

Put An End To Resource Conflicts

RMS-II is a completely integrated resource management system that allows a project manager to define up to 96 separate resource centers — people, departments, machine tools, test centers, etc. — each with a unique capacity in hours, an hourly cost, and a burden rate. These resources can then be allocated to the activities in your PMS-II projects. Reports can be generated showing these allocations on either a project or a resource center basis.

RMS-II is ideal for contractors who have their own crews, for engineering or manufacturing firms using a matrix type of organization, or in any project situation where conflicts over scarce resources can arise. It makes capacity planning and load leveling easy by providing the resource managers with quick visibility of the demands on the resource centers under their control. RMS-II provides:

- Optimal selection of either the resource center's burden rate or the burden rate associated with the project (fixed burden contract).
- Video display of all allocations against a resource center that potentially conflict with the activity that is being allocated.
- Allocations automatically update the activity's budget for labor and burden.
- Allocations are made in hours per day and can be budgeted in either total hours or total dollars.

End Unplanned Budget Shortfalls

Allocation Report of a Project

Allocation Report of a Project									
Activity	Resource	Start	End	Duration	Allocation	Usage	Remaining	Cost	Notes
10	10	10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20	20	20
30	30	30	30	30	30	30	30	30	30
40	40	40	40	40	40	40	40	40	40
50	50	50	50	50	50	50	50	50	50
60	60	60	60	60	60	60	60	60	60
70	70	70	70	70	70	70	70	70	70
80	80	80	80	80	80	80	80	80	80
90	90	90	90	90	90	90	90	90	90
100	100	100	100	100	100	100	100	100	100

Allocation Report of a Project									
Activity	Resource	Start	End	Duration	Allocation	Usage	Remaining	Cost	Notes
10	10	10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20	20	20
30	30	30	30	30	30	30	30	30	30
40	40	40	40	40	40	40	40	40	40
50	50	50	50	50	50	50	50	50	50
60	60	60	60	60	60	60	60	60	60
70	70	70	70	70	70	70	70	70	70
80	80	80	80	80	80	80	80	80	80
90	90	90	90	90	90	90	90	90	90
100	100	100	100	100	100	100	100	100	100

Allocation Report of a Project									
Activity	Resource	Start	End	Duration	Allocation	Usage	Remaining	Cost	Notes
10	10	10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20	20	20
30	30	30	30	30	30	30	30	30	30
40	40	40	40	40	40	40	40	40	40
50	50	50	50	50	50	50	50	50	50
60	60	60	60	60	60	60	60	60	60
70	70	70	70	70	70	70	70	70	70
80	80	80	80	80	80	80	80	80	80
90	90	90	90	90	90	90	90	90	90
100	100	100	100	100	100	100	100	100	100

ALLOCATION REPORT —

- Shows all allocations to a given activity within a project from any resource center.
- Indicates whether each allocation to an activity is within that activity's current scheduled time period.
- Offers all the Sort and Select features from PMS's Activity Report.

Resource Allocation Report (CAR)

03/07/04

1 ELECTRONIC DEVICES

***** DEVICES ALLOCATED REPORT *****

75.00 PGM 0000 000000-1000

Page 1

-----PGM 12/11/00 TO 03/10/04-----

DATE	TIME	STATUS	STATUS	UIC	P-0000	REPORT	PGM	TO	LOANED	RETURN	
0000	1	00	70	10	11	00	000	12/11/00	03/11/04	10,000	5,000
0000	1	00	00	70	02	10	100	12/10/01	03/11/00	1,500	0,000
0000	1	00	00	10	11	10	200	06/09/00	03/10/04	1,500	0,000
							2000			21,000	13,000

END OF DEVICES ALLOCATED REPORT -- PRINTED -- ALL

[illegible]

- Shows sum of all allocations of a given resource center as a percent of capacity over time.
- Graph shows allocations by date and highlights allocations in excess of 100% of capacity.
- Data selectable and single project selectable for partial print.

Reproduced from
best available copy.

Consolidated Allocation Report/Graph

01/01/84 *** CONSOLIDATED ALLOCATION REPORT *** PAGE 1
CAPACITY 10 15.00 PER HOUR DEDUCT 10%

.....FROM 12/15/83 TO 01/10/84.....

PROJECT	RES/HR	RES	DEPT	RES/HR	SCAP	D-DAYS	TOTALS	FROM	TO	LARGE	DORDER
DEPT	0	00	70	10	21	40	100	12/15/83	01/10/84	10,000	1,000
DEPT	0	20	00	30	02	10	300	12/15/83	01/10/84	1,500	5,000
DEPT	0	00	00	30	02	15	300	01/01/84	01/10/84	7,500	0,000
							1000			15,000	11,200

END OF RESOURCE ALLOCATION REPORT

01/01/84 *** CONSOLIDATED ALLOCATION REPORT *** PAGE 1
CAPACITY 10 15.00 PER HOUR DEDUCT 10%

.....FROM 12/15/83 TO 01/10/84.....

PROJECT	RES/HR	RES	DEPT	RES/HR	SCAP	D-DAYS	TOTALS	FROM	TO	LARGE	DORDER
DEPT	0	00	70	30	37	40	600	12/15/83	01/10/84	10,000	10,000
DEPT	0	20	00	30	30	10	300	12/15/83	01/10/84	1,500	5,000
DEPT	0	00	00	30	10	15	300	01/01/84	01/10/84	7,500	0,000
							1150			11,200	14,875

END OF RESOURCE ALLOCATION REPORT

GRAND TOTAL ALL RESOURCES 1250 56,250 10,375

RESOURCES CENTER INCLUDED : 1 1

01/01/84 *** CONSOLIDATED ALLOCATION REPORT *** PAGE 1
CAPACITY 10 15.00 PER HOUR DEDUCT 10%

.....FROM 12/15/83 TO 01/10/84.....

PROJECT	RES/HR	RES	DEPT	RES/HR	SCAP	D-DAYS	TOTALS	FROM	TO	LARGE	DORDER
DEPT	0	00	70	30	37	40	600	12/15/83	01/10/84	10,000	10,000
DEPT	0	20	00	30	30	10	300	12/15/83	01/10/84	1,500	5,000
DEPT	0	00	00	30	10	15	300	01/01/84	01/10/84	7,500	0,000
							1150			11,200	14,875

END OF RESOURCE ALLOCATION REPORT

- Provides allocation to capacity data over time for any combination of 2 to 96 resource centers.
- Allows resource manager to define individuals as resource centers and still extract summary allocation data for the entire group or department.

And you can manage your project's material commitments as well.

A Materials Management System for use with PMS-11

[illegible]

MATERIAL ORDERS DETAIL REPORT —

- Shows the detail of each purchase order in the data base, including quantities received against orders.
- P.O.s can be selectively reported based on a range of P.O. numbers, status of purchase order, order date, and vendor.

[illegible]

MATERIALS RECEIVED — AUDIT AND CONTROL —

- Provides for a continuous audit trail of the quantities and costs of materials received as well as a convenient means of controlling the authorization of material expenditures.

[illegible]

VENDOR REFERENCE AND ANALYSIS LISTING —

- Acts as a control list of acceptable vendors and as an aid to tracking each vendor's performance.

And when you get tired of running PMS-II yourself

BPS-II

THE PROBLEM:

When you first get your FMS-II, and are running three or four projects, sitting at the computer and generating each of the reports you needed is not much of a chore — in fact, it is actually a lot of fun. But after you have several projects on your system, and the novelty of watching the programs go through their paces has worn off, tending the machine while it generates the many weekly reports you require can become an expensive and tiresome task.

THE SOLUTION:

BPS-II is a batch processing system, which allows you to:

- 1) define the projects you are currently managing.
- 2) calculate and generate activity reports, GANTT charts, and edit listings, and
- 3) select options for these calculations and reports.

Then, with a single command from you, BPS-II will calculate and report against any number of projects with as many different options as your current PMS-II system, all from your pre-defined files, completely unattended by you.

If you will find yourself running the same reports against the same projects day after day or week after week, BPS-II can result in a considerable savings in time, money, boredom, and aggravation.

BPS-II has been designed to provide you with the greatest flexibility possible by allowing you to set up multiple independent files for:

- 1) projects to be processed,
- 2) reports to be generated, and
- 3) the sort, select, and format options to be used with the reports.

Then, any set of projects can be run against any set of reports using any set of options!

... let BPS-II do it for you

Maximum Project Control on a Micro Budget

Pricing:	Full System	Demo	Upgraded Demo
1) PMS-II	\$1295.00	\$50.00	\$1245.00
2) RMS-II	\$ 995.00	\$50.00	\$ 945.00
3) MMS-II	\$ 995.00	\$50.00	\$ 945.00
4) BPS-II	\$ 495.00		

(California residents please add 6% Sales Tax.)

Discount Policy:

30% educational discount for recognized institutions. Demo system price applied toward full system price.

Payment Terms:

Prepay or C.O.D. Next day air available via UPS Red Label (add \$20.00 per PMS-II system).

Delivery:

All systems shipped within 24 hours ARO, UPS Blue Label (second day air).

Freight:

NVC in U.S.A.

About the Demo Systems

The demo systems come with full user documentation including tutorial and ALL the features of the full system except those which allow you to create or add to a project network. With the DEMO network that is included on your disk, you can explore every feature of PMS-II, RMS-II, or MMS-II, on your own machine, at your leisure. When you decide to purchase a full system, just return your demo disk(s) for an upgrade(s), and you will receive \$50 credit for each upgraded demo.

ORDER FORM

- ☐ Please send one PMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system)
- ☐ Please send one RMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system) (requires PMS-II)
- ☐ Please send one MMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system) (requires PMS-II)
- ☐ Please send full PMS-II system (\$1295.00)
- ☐ Please send full RMS-II system (\$995.00) (requires PMS-II)
- ☐ Please send full MMS-II system (\$995.00) (requires PMS-II)
- ☐ Please send full BPS-II system (\$495.00) (requires PMS-II)

Ordered by (print): _____

Title: _____ Date: _____

Company: _____

Address: _____

Phone: () _____ Ext. () _____

Disk Format: ☐ CP/M ☐ CP/M 86 ☐ PC DOS ☐ MSDOS

Disk Size: ☐ 8" ☐ 5 1/4"

Computer: _____ Make _____ Model _____

SHIPPING INSTRUCTIONS/DEALER STAMP

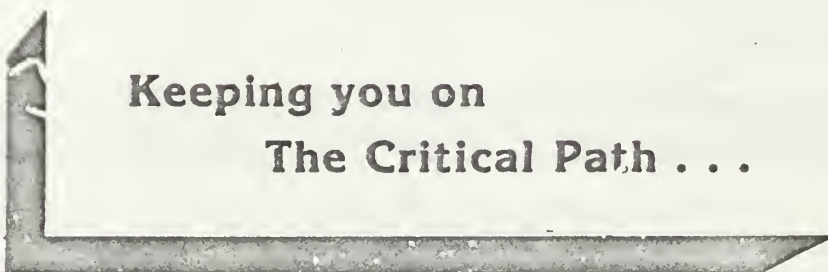
DEMAND
CONSTRUCTION SERVICES, INC.

7430 E. Caley Ave. Building 1, Suite 350
ENGLEWOOD, COLORADO 80111
(303) 740-6647

11722 Sorrento Valley Rd. Suite 110
San Diego, California 92121

INVOICE: 11/19/84 NVC INC

(619) 481-5938
TOLL FREE 878-7257 NVC INC



**Keeping you on
The Critical Path . . .**



11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6998/Telex #701257 NAMICA UD

APPENDIX D
SUBCONTRACT BACKCHARGE

**WaltersCM**A Bill L. Walters
Company

7001 East Highland Avenue, Suite 200, Englewood, Colorado 80111, (303) 778-0280

SUBCONTRACT BACKCHARGE**SUBCONTRACTOR:**

 _____ Company _____

Date 11-1-84 Project Hyland Office Park
 Subcontract # 3710-2505
 Backcharge Cost Code 3710-2510
 Notification Date 8-15-84

Under the terms of the subcontract agreement, referenced above, Walter CM has exercised its right and completed the following work:

Construction of three (3) 10-ft. Type R inlets and two (2) 5-ft. Type R inlets in the
Private Road, excluding manhole rings, ladder rings and grates supplied by Subcontractor,
by mutual agreement. Per WCM letter dated 8-15-84, maximum backcharge total of 5 x \$2,016.00
= \$10,080.00 is applicable, as actual costs exceeded that maximum. (WCM Cost Distribution
summaries, material/equipment invoices, and Payroll Distribution sheets are attached hereto.)

Per Paragraphs 19, 21, & 24 of the agreement, your next subcontract payment will be credited the following amount for reimbursement of our costs.

<u>Vendor</u>	<u>Invoice No./WCM Labor</u>	<u>Cost</u>
WCM labor (see attached)	8/19, 8/26, 9/2, 9/9, 9/16	\$10,446.69
Misc. vendors (see attached)	Materials & equipment	2,722.59
ACTUAL COSTS SUBTOTAL		\$13,169.28
Minimum Allowed minus Actual Costs = \$10,080.00 - \$13,169.28		(3,089.28)
Subtotal		\$10,080.00
Overhead (<u>0</u> %)		-0-
TOTAL		\$10,080.00

Bill L. Walters Construction Management, Inc.

By [Signature]
 David M. Metcalf/Project Manager

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

WCM-831 (8/82)eq

FRI, AUG 14, 1984, 4:47 PM

FILE CODE - J FUTURE DATE

--- PROJECT DISSEM / COST RESTRICTION ---

8/31/84

WATERS CONST. BUDGETARY -99-

PAGE 2

8/31/84

PROJECT NO.	CODE NO.	PI NO.	TYPE NO.	REMARKS / CLIENT	EXP. NO. / C/L TRANS.	DISSEM	COST	ACCT	GEN. LINE
						DISSEM	DISSEM	DISSEM	DISSEM

2710 41 AND 67722 P/M

CONTINUED

2710	01	01	01	LAB. 001704			0134.68	PJ03-0171	500001P
2710	01	01	01	CS. 1001504			046.00	PJ03-0172	501001P
2710	01	01	01	LAB. 002104			01929.95	PJ04-0173	500001P
2710	01	01	01	CS. 1002104			1001.99	PJ04-0174	501001P
2710	02	02	02	CONCRETE, INC.	23512		0699.30	PJ03-0229	502001P
2710	02	02	02	SHAWNEE REPAIR INC CO.	STRT		0204.76	PJ03-0232	502001P
2710	02	02	02	SHAWNEE REPAIR INC CO.	STRT		0149.50	PJ03-0234	502001P

TOTAL FOR CODE - 2710 -

57816.64

2713	03	03	03	AND ENGINEERING, INC	1032		0014.00	PJ03-0327	503001P
2713	03	03	03	AND ENGINEERING, INC	1064		01210.00	PJ03-0329	503001P

TOTAL FOR CODE - 2713 -

02022.00

19000	03	03	03	INDUSTRIAL CONST & SUPPLY	STRT		010100.00	PJ03-0331	503001P
19000	03	03	03	W' BIRNELL PLUMBING CO	STRT		010100.00	PJ03-0334	503001P

TOTAL FOR CODE - 19000 -

26210	00	00	00	*****	JJ 29		022.71-	CL01-0012	505001P
-------	----	----	----	-------	-------	--	---------	-----------	---------

TOTAL FOR CODE - 26210 -

022.71-

TOTAL FOR PROJECT - 2710 -

012468.90

COST CODE EXP NO.	EMPLOYEE NAME	CRAFT DESC.	HOURS		COMPENSATION			BURDEN		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	TOTAL	REGULAR OVERTIME	TAXABLE NON-TAXABLE	TOTAL	COMPANY PROJECT	CRAFT TOTAL	
<hr/>										
1030										
23932	COLONETT KEVIN ROBER	LABORER	6.50		83.40			23.64		
				6.50		83.40	83.40		23.64	111.12
TOTAL FOR CODE 1030			6.50		83.40			23.64	23.64	111.12
				6.50		83.40	83.40		23.64	111.12
<hr/>										
2505										
77500	SOLLECITO, JAMES R	LABORER	32.00		208.00			86.40		
				32.00		208.00	208.00		86.40	374.40
88400	BOON (STEAK) STEWART	LABORER	16.00		132.00			43.68		
				16.00		132.00	132.00		43.68	197.68
TOTAL FOR CODE 2505			48.00		440.00			132.00	132.00	572.00
				48.00		440.00	440.00		132.00	572.00
<hr/>										
2510										
19450	BROWN PHILIP JOHN	COMPONENTS-RE	8.00		154.68			46.40		
				8.00		154.68	154.68		46.40	201.08
TOTAL FOR CODE 2510			8.00		154.68			46.40	46.40	201.08
				8.00		154.68	154.68		46.40	201.08
TOTAL FOR PROJECT 3710			62.50		600.16			204.04	204.04	824.20
				62.50		600.16	600.16		204.04	824.20

JOB CODE		SUBJECT		COMPENSATION		SUBJECT		TOTAL LABOR HRS RESP.
EXP NO.	EXPLANATION	CRFT NO.	REMARKS	QUANTITY	*TOTAL*	COMPANY PROJECT	CRFT *TOTAL*	

1000	23762 COLLETT KEVIN ROGER LADDER		8.00		100.20		31.50	
				8.00		100.20	31.50	136.76
TOTAL FOR CODE 1000			8.00		100.20		31.50	136.76

1470	23766 CHICKEN BELCHER S LADDER		4.00		66.00		19.00	
			4.00		66.00		19.00	85.00
77500 BELLECKER, JAMES S LADDER			2.00		10.00		12.50	
			2.00		27.00		13.50	38.50
89223 TONG ROBERT E LADDER			4.00		41.00		12.50	
			4.00		41.00		12.50	53.50
TOTAL FOR CODE 1470			6.00		55.00		45.50	197.60

2220	23762 COLLETT KEVIN ROGER LADDER		16.00		210.40		63.12	
			16.00		210.40		63.12	273.52
TOTAL FOR CODE 2220			16.00		210.40		63.12	273.52

2300	23766 CHICKEN BELCHER S LADDER		8.00		90.00		26.50	
			8.00		90.00		26.50	114.40
77500 BELLECKER, JAMES S LADDER			30.00		270.00		81.00	
			30.00		270.00		81.00	391.00
88440 BOYD EDWARD STEWART LADDER			4.00		35.00		11.40	
			4.00		35.00		11.40	99.00
89223 TONG ROBERT E LADDER			44.00		454.00		133.50	
			44.00		454.00		133.50	584.50
TOTAL FOR CODE 2300			86.00		947.00		254.10	1,104.10

2310	18320 BLISS JENNIFER	COMPENSATION-HR	24.00		434.04		128.21	
			24.00		434.04		128.21	564.25
19460 BRUN FREDIP JOHN	COMPENSATION-HR		22.00		618.72		185.62	
			22.00		618.72		185.62	849.34
23766 CHICKEN BELCHER S LADDER			16.00		176.00		62.70	
			2.00		23.00		62.70	271.70
75070 SHELTER JOHN S	COMPENSATION-HR		27.50		672.19		203.46	
			27.50		672.19		203.46	885.63
TOTAL FOR CODE 2310			109.50		1,905.95		581.99	2,527.94



CONPESCO INC.

A Division of The Quanta Co.

Marketing Address: P.O. Box 17227 • Denver, Colo. 80217
Office and Plant: 1200 South Bascom Pk Drive • Davis, Ca. 95622
Tel: (510) 777-3083

INVOICE

DATE ORDERED	DATE DELIVERED	INVOICE NO.
08/22/84	08/22/84	023512
1		CUSTOMER ORDER NUMBER

SOLD TO: **WALTERS CONST MGMT INC**
7951 E MAPLEWOOD AVE
SUITE 200
ENGLEWOOD
CO 80111

SHIP TO: **BANK OF WESTMINSTER**
BANK OF WESTMINSTER
9191 SHERIDAN BLVD
WESTMINSTER CO

FILE NO.	INVOICE DATE	ENTERED BY	ORDER	CASH	TERMS	SHIP	DATE	AM	PM
31	08/22/84	SRP	X		NET 30		08/22/84		
SPECIAL INSTRUCTIONS: SHIP 1									
SPECIAL INSTRUCTIONS: ALL CHARGES ARE PAYABLE ON OR BEFORE DATE OF DELIVERY. NO ALLOWANCE FOR SHORTAGE OR DAMAGE MUST BE MADE IMMEDIATELY.									
SPECIAL INSTRUCTIONS: SHIP 1									
SPECIAL INSTRUCTIONS: SHIP 1									

ITEM NO / DESCRIPTION	QUANTITY	UNIT	PRICE	AMOUNT
1	1	LOT	675.00	675.00
LOT #5529				
TUB INLEIS EXTRA TO CONTRACT				

RECEIVED

AUG 24 1984

CUSTOMER RECEIVED

YOU MAY DEDUCT \$6.75 IF PAID BY 9/10/84				
SUB TOTAL	CREDIT ON	DEBIT	DELIVERY	DEPOSIT
675.00	0	0.00	24.30	0.00
TOTAL				699.30
PAY THIS AMOUNT				699.30

THANK YOU

Plant
Arada
8400 Fenton

Plant
Suburban
11755 Brighton Rd

Order No. 3710
Date 8-20-88
Customer's Signature [Signature]
Plant 11755 Brighton Rd
City Brighton
State MI
Zip 48104

QTY	CONCRETE	PRICE	AMOUNT
42	BAR TYPE 2	52.50	2205.00

AIR ENTRAINMENT	YES	NO
POZZOLITH	32	344
CALCIUM CHLORIDE	3	144
USE CURB GUTTER PAVING	3	144
FLATWORK FLOOR	3	144
MAX BUMP	3	144
PUMP MIX	3	144

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS
 WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR 15¢ PER MIN FOR ANY PART THEREOF FOR UNLOADING TIME OVER 15 MIN TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE AT THE PURCHASER'S RESPONSIBILITY	3	144
Left Plant	3	144
Arrived Job	3	144
Finished Unloading	3	144

STATE TAX	144
CITY TAX	144
RTD TAX	144
COUNTY TAX	144
SUB TOTAL	2362.50
WAITING TIME	144
TOTAL CHARGE	2506.50

FINANCE CHARGE: AT THE RATE OF 2% PER MONTH (APR 2%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.
Customer's Signature [Signature]
Plant 11755 Brighton Rd
City Brighton
State MI
Zip 48104

CAUTION: Fully mixed concrete contains a great deal of alkali. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any contact with eyes, flush the contact area immediately with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

Plant
Arada
8400 Fenton

Plant
Suburban
11755 Brighton Rd

Order No. 3710
Date 8-20-88
Customer's Signature [Signature]
Plant 11755 Brighton Rd
City Brighton
State MI
Zip 48104

QTY	CONCRETE	PRICE	AMOUNT
42	BAR TYPE 2	52.50	2205.00

AIR ENTRAINMENT	YES	NO
POZZOLITH	32	344
CALCIUM CHLORIDE	3	144
USE CURB GUTTER PAVING	3	144
FLATWORK FLOOR	3	144
MAX BUMP	3	144
PUMP MIX	3	144

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS
 WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR 15¢ PER MIN FOR ANY PART THEREOF FOR UNLOADING TIME OVER 15 MIN TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE AT THE PURCHASER'S RESPONSIBILITY	3	144
Left Plant	3	144
Arrived Job	3	144
Finished Unloading	3	144

STATE TAX	144
CITY TAX	144
RTD TAX	144
COUNTY TAX	144
SUB TOTAL	2362.50
WAITING TIME	144
TOTAL CHARGE	2506.50

FINANCE CHARGE: AT THE RATE OF 2% PER MONTH (APR 2%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.
Customer's Signature [Signature]
Plant 11755 Brighton Rd
City Brighton
State MI
Zip 48104

CAUTION: Fully mixed concrete contains a great deal of alkali. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any contact with eyes, flush the contact area immediately with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

Suburban Reddi Mix Co. Plant
 5400 Fenton Ave. 1346 Wadsworth Ave. 8003 Brighton
 Phone 421-0720 11755 Brighton Rd.

Driver Dave 67
 Order No. 3710-2510 Date 8-24-82
 Job Address 92nd & Sheridan
 Name Walter C. M.

QTY	CONCRETE	PRICE	AMOUNT
2 1/4	QUIK-SET TYPE 2 1/4 IN. MAX SLUMP	52.50	121.25
	AIR ENTRAINMENT		
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE		
	USE CURB GUTTER PAVING FOOTINGS WALLS		
	FLATWORK FLOOR		
	MAX SLUMP 2 INCH		
	PUMP MIX		

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS
 WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR (85¢ PER MIN) ON ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT
 20

WATER ADDED TO THE MIX
 ANY WATER ADDED TO THE MIX WILL BE THE PURCHASER'S RESPONSIBILITY ON JOB
 4

Plant 12-1-35 Finished Unloading
 TAX 2.00
 COUNTY TAX
 SUB TOTAL
 WAITING TIME
 TOTAL CHARGE 149.58

6722 Customer's Signature

NOTE: Freshly mixed concrete, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where skin and wash exposed skin areas promptly with water. If any cement material gets into eyes, flush immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

Suburban Reddi Mix Co. Plant
 5400 Fenton Ave. 1346 Wadsworth Ave. 8003 Brighton
 Phone 421-0720 11755 Brighton Rd.

Driver Dave 67
 Order No. 3710 Date 8-24-82
 Job Address 92nd & Sheridan
 Name Walter C. M.

QTY	CONCRETE	PRICE	AMOUNT
2 1/4	QUIK-SET TYPE 2 1/4 IN. MAX SLUMP	52.50	121.25
	AIR ENTRAINMENT		
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE		
	USE CURB GUTTER PAVING FOOTINGS WALLS		
	FLATWORK FLOOR		
	MAX SLUMP 2 INCH		
	PUMP MIX		

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS
 WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR (85¢ PER MIN) ON ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT
 20

WATER ADDED TO THE MIX
 ANY WATER ADDED TO THE MIX WILL BE THE PURCHASER'S RESPONSIBILITY ON JOB
 4

Plant 12-1-35 Finished Unloading
 TAX 2.00
 COUNTY TAX
 SUB TOTAL
 WAITING TIME
 TOTAL CHARGE 149.58

6722 Customer's Signature

NOTE: Freshly mixed concrete, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where skin and wash exposed skin areas promptly with water. If any cement material gets into eyes, flush immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

FILE CODE - 1 FIVE SIX

— 1935.11.25 / 1935.11.25 —

1999

RECEIVED

22

524

PROJECT NO.	CASE NO.	PI NO.	TYPE NO.	NUMBER / CLINIC	EXP. NO. / CA. TIME	—INCISE— —MOUNT—	—CAST— —MOUNT—	SHEET NO.	CEL. / LENSE RECT. NO.
-------------	----------	--------	----------	-----------------	---------------------	---------------------	-------------------	-----------	---------------------------

270 JAMES OWEN PAGE

1998

[illegible]

WALTON ROAD - 1200 -

8794.65

109	01	L8-1979A	627.23	FBI-01.17	300017
109	01	G2-1979A	627.21	FBI-01.28	300018

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED
DATE 08-14-2010 BY 60322 UCBAW

153

1949 03 11 12:00 PM 0211 073.10 1200-0140 SECTION 9

TOTAL PER CASE - 1900 -

573.60

[illegible]

2024 10 24 - 2024 -

81.29

2220	01	00000000000000000000	LAB. 000000	0200.00	F002-01.29	300001P
2220	01	00000000000000000000	CL. 000000	0119.00	F002-01.40	301001P
2220	01	00000000000000000000	LAB. 000000	0000.00	F004-01.67	300001P
2220	01	00000000000000000000	CL. 000000	0000.00	F004-01.68	300001P

1987 - 1988

10.66

Z263	01	00000000000000000000	L25. 070020	0000.25	PR01-0137	300001P
Z260	01	00000000000000000000	C3. 200020	0133.30	PR01-0138	301 001P
Z260	01	00000000000000000000	L25. 070000	0704.00	PR02-0141	300001P
Z260	01	00000000000000000000	C3. 200000	0033.34	PR02-0142	301 001P
Z260	01	00000000000000000000	L25. 070000	0000.00	PR02-0173	300001P
Z260	01	00000000000000000000	C3. 200000	0113.76	PR02-0174	301 001P
Z260	02	07000000000000000000	0707	000000.00	0701-0001	070001P
Z260	02	07000000000000000000	0707	000000.00	0701-0007	070001P

REF ID: A66188 - 288 -

1954. 27

2310	04	00000000000000000000	L28. 070204	02472.42	0004-0139	000001P
2310	04	00000000000000000000	C3. 230224	0741.73	0004-0140	001001P
2310	04	00000000000000000000	L28. 070704	01408.21	0004-0143	000001P
2310	04	00000000000000000000	C3. 230704	0009.09	0004-0144	001001P
2310	04	00000000000000000000	L28. 071404	04779.28	0004-0173	000001P
2310	04	00000000000000000000	C3. 2301404	0001.17	0004-0176	001001P
2310	02	00000000000000000000	J1 003	0779.13	C.04-0013	000001P
2310	02	C3 100017	00101	007.24	0004-0010	000001P
2310	02	C3 100017	00100	007.20	0004-0009	000001P

FILE CASE - 3 FORMER BMT

--- PROJECT EXPENSE / COST RECONSTRUCTION ---

09/04/94

WALTERS CHECK, RECONSTRUCTION - 09-

PAGE 3

9/21/94

PROJECT NO.	CASE NO.	PT NO.	TYPE NO.	DESCRIPTION / CLIENT	DOC. NO. / C/L NUMBER	EXPENSE	COST	ANALYST	CHK. / L338	ACCY. NO.
-------------	----------	--------	----------	----------------------	-----------------------	---------	------	---------	-------------	-----------

2710 WFLAND OFFICE PARK

CONTINUED

2710	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6139.99	2383-0121	302001P		
2710	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6113.26	P300-0123	302001P		
2710	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6217.26	P300-0123	302001P		
2710	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6176.77	P300-0123	302001P		
2710	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6139.23	P300-0123	302001P		
2710	02	02	02	YOL & SICKER SUPPLY INC.	7436	943.91	P300-0146	302001P		
2710	04	04	04	CCS SUPPLY	30990	618.36	P300-0046	304001P		
2710	04	04	04	CCS SUPPLY	30990	612.00	P300-0047	304001P		

TOTAL FOR CASE - 2710 -

7946.74 → 7,124.41

2710	02	02	02	SHAWNEE BUNKER EEE CO.	1092	6047.00	P300-0247	303001P		
2710	02	02	02	SHAWNEE BUNKER EEE CO.	1092	6294.00	P300-0248	303001P		

TOTAL FOR CASE - 2710 -

12341.00

2465	02	02	02	SHAWNEE BUNKER EEE CO.	1	616122.00	P300-0046	303001P		
2465	02	02	02	ZIS ZAS CONCRETE SERVICES C	10610	993.00	P300-0172	303001P		

TOTAL FOR CASE - 2465 -

616122.00

2629	02	02	02	ZIS ZAS CONCRETE SERVICES C	10610	990.00	P300-0174	303001P		
------	----	----	----	-----------------------------	-------	--------	-----------	---------	--	--

TOTAL FOR CASE - 2629 -

990.00

2425	02	02	02	SHAWNEE BUNKER EEE CO.	1092	6043.00	P300-0243	303001P		
2425	02	02	02	ZIS ZAS CONCRETE SERVICES C	10600	6160.00	P300-0171	303001P		
2425	02	02	02	ZIS ZAS CONCRETE SERVICES C	10600	6030.00	P300-0173	303001P		

TOTAL FOR CASE - 2425 -

61493.00

2725	04	04	04	SHAWNEE BUNKER EEE CO.	1092	6210.40	P300-0143	303001P		
2725	04	04	04	SHAWNEE BUNKER EEE CO.	1092	663.12	P300-0146	303001P		
2725	04	04	04	SHAWNEE BUNKER EEE CO.	1092	9986.00	P300-0246	303001P		

TOTAL FOR CASE - 2725 -

61279.52

2730	04	04	04	SHAWNEE BUNKER EEE CO.	1092	6167.00	P300-0159	303001P		
2730	04	04	04	SHAWNEE BUNKER EEE CO.	1092	622.10	P300-0159	303001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	61298.71	P300-0124	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6301.73	P300-0129	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6401.97	P300-0134	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	61667.73	P300-0136	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	6047.12	P300-0141	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	61337.32	P300-0142	302001P		
2730	02	02	02	SHAWNEE BUNKER EEE CO.	8787	61639.00	P300-0144	302001P		

TOTAL FOR CASE - 2730 -

66475.13

COST CODE EMP NO.	EMPLOYEE NAME	CRAFT DESC.	HOURS		COMPENSATION		BURDEN		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	TOTAL	REGULAR OVERTIME	TAXABLE NON-TAXABLE	TOTAL	COMPANY PROJECT	
1000									
27952	COLQUHITT KEVIN ROGER	LABORER	16.00		210.00		63.12		
				16.00		210.00		63.12	273.32
TOTAL FOR CODE 1000			16.00		210.00		63.12		
				16.00		210.00		63.12	273.32
2215									
27944	CORRIGAN BELCHER S	LABORER	8.00		88.00		26.40		
				8.00		88.00		26.40	114.40
88640	BOON EDWARD STEWART	LABORER	8.00		76.00		22.00		
				8.00		76.00		22.00	98.00
TOTAL FOR CODE 2215			16.00		164.00		49.20		
				16.00		164.00		49.20	213.20
2505									
27944	CORRIGAN BELCHER S	LABORER	8.00		88.00		26.40		
				8.00		88.00		26.40	114.40
77900	SOLLECKETS, JAMES S	LABORER	8.00		72.00		21.60		
				8.00		72.00		21.60	93.60
88640	BOON EDWARD STEWART	LABORER	8.00		76.00		22.00		
				8.00		76.00		22.00	98.00
87225	FOURS ROBERT E	LABORER	21.00		215.25		64.50		
				21.00		215.25		64.50	279.75
TOTAL FOR CODE 2505			45.00		451.25		133.20		
				45.00		451.25		133.20	584.45
2510									
63225	ALDRIDGE JONAS	CARPENTERS-RES	40.00		723.00		217.02		
				40.00		723.00		217.02	940.02
9450	BRUNE PHILIP JOHN	CARPENTERS-RES	32.00		618.72		185.62		
				32.00		618.72		185.62	804.34
27952	COLQUHITT KEVIN ROGER	LABORER	16.00		210.00		63.12		
				16.00		210.00		63.12	273.32
27944	CORRIGAN BELCHER S	LABORER	16.00		176.00		52.00		
				16.00		176.00		52.00	228.00
77900	SOLLECKETS JOHN S	CARPENTERS-RES	40.00		713.00		217.02		
				40.00		713.00		217.02	930.02
87225	FOURS ROBERT E	LABORER	2.00		20.50		6.15		
				2.00		20.50		6.15	26.65
TOTAL FOR CODE 2510			146.00		2,472.42		741.73		
				146.00		2,472.42		741.73	3,214.15
TOTAL FOR PROJECT 3710			223.00		3,290.67		909.43		
				223.00		3,290.67		909.43	4,237.50

COST CODE EMP NO.	EMPLOYEE NAME	CRAFT DESC.	SURG		COMPENSATION			SURGE		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TAXABLE NON-TAXABLE	*TOTAL*	COMPANY PROJECT	CRAFT *TOTAL*	
09225	YOUNG ROBERT E	LABORER	1.00	1.00	5.13		5.13	1.54	1.54	6.67
TOTAL FOR CODE 2745			51.00	51.00	737.92		737.92	229.33	229.33	967.25
2510			1.00	1.00	26.56		26.56			27.56
13325	ALLEN JONAS	COMPUTER-RES	24.00	24.00	434.04		434.04	130.21	130.21	564.25
19450	BROWN PHILIP JOHN	COMPUTER-RES	16.00	16.00	309.36		309.36	92.81	92.81	402.17
23952	CALVERT KEVIN ROGER	LABORER	16.00	16.00	210.40		210.40	63.12	63.12	273.52
23960	CORRIGAN WILSON S	LABORER	8.00	8.00	80.00		80.00	26.40	26.40	106.40
73040	SINGLETON JOHN S	COMPUTER-RES	29.50	29.50	533.31		533.31	160.05	160.05	693.36
09225	YOUNG ROBERT E	LABORER	12.00	12.00	123.00		123.00	36.90	36.90	159.90
TOTAL FOR CODE 2510			103.50	103.50	1,698.31		1,698.31	509.49	509.49	2,207.80
2725										
23952	CALVERT KEVIN ROGER	LABORER	16.00	16.00	210.40		210.40	63.12	63.12	273.52
TOTAL FOR CODE 2725			16.00	16.00	210.40		210.40	63.12	63.12	273.52
TOTAL FOR PROJECT 3710			247.90	247.90	3,796.21		3,796.21	1,026.83	1,026.83	4,823.04
			1.00	1.00	26.56		26.56			27.56

PROJECT 3710 WYLAND OFFICE FURN
BUDGET CODE 00000000-00

PERIOD DISTRIBUTION
PAGE 22

PERIOD
9/16/74

COST CODE FPO NO. EMPLOYEE NAME CRAFT DESC.	— D U R —		— C O M P E N S A T I O N —		— B U D G E T —		TOTAL LABOR AND BUDGET
	REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TOTAL NON-TAXABLE	*TOTAL*	CRAFT PROJECT	
1030							
23900 OILKATT KEVIN ROSE LADDER	16.00		210.00		63.12		
		16.00		210.00	63.12		273.32
TOTAL FOR CODE 1030	16.00	16.00	210.00	210.00	63.12		273.32
1230							
36400 BICKELT'S LARRY LEO LADDER	0.00		05.00		23.00		
		0.00		05.00	23.00		111.00
TOTAL FOR CODE 1230	0.00	0.00	05.00	05.00	23.00		111.00
2300							
23900 OILKATT KEVIN ROSE LADDER	0.00		05.00		23.00		
		0.00		05.00	23.00		114.00
77300 SALLECKER, JAMES B LADDER	10.30		130.30		39.13		
		10.30		130.30	39.13		169.63
00400 BIRD EDWARD STEWART LADDER	16.00		132.00		43.60		
		16.00		132.00	43.60		197.60
09220 YOUNG ROBERT E LADDER	1.00		13.30		4.61		
	1.00	1.00		13.30	4.61		19.99
TOTAL FOR CODE 2300	26.30	26.30	379.30	379.30	113.76		501.64
2510							
16320 BLISS JENNIFER COMPENSATION	33.00		396.01		179.04		
		33.00		396.01	179.04		773.05
19400 BIRD EDWARD STEWART LADDER	24.00		444.04		147.74		
	24.00	24.00		444.04	147.74		608.27
73000 SALLECKER, JAMES B LADDER	32.00		370.71		101.30		
	32.00	32.00		370.71	101.30		706.03
00400 BIRD EDWARD STEWART LADDER	0.00		76.00		22.00		
		0.00		76.00	22.00		98.00
TOTAL FOR CODE 2510	99.00	99.00	1,715.57	1,779.53	531.16		2,301.71
3700							
36400 BICKELT'S LARRY LEO LADDER	4.00		43.00		12.90		
		4.00		43.00	12.90		55.90
TOTAL FOR CODE 3700	4.00	4.00	43.00	43.00	12.90		55.90
TOTAL FOR PROJECT 3710	163.30	163.30	2,423.47	2,495.83	748.74		3,244.57



DELIVERY ADDRESS

THE BROOMFIELD LUMBER CO., Inc.

LUMBER, HARDWARE, PAINT, GLASS, STEEL

7975 W. 120th

P.O. BOX 308

Phone 485-2387

BROOMFIELD, COLO. 80020

7711

Date 8-14-84

OUR CREDIT POLICY: Terms are 2% 10th, Net 30th. Discounts are not allowed on new shipments, full expense, full charges or bid items, or unless otherwise noted. Accounts are billed at the end of each month, and are payable as noted above. A Service Charge of 2% per month on any unpaid balance as of the 25th of the month following billing will be assessed. Additionally, account charging privilege will be suspended until the unpaid balance is cleared up. If this account is charged for collection, customer agrees to pay reasonable attorney's fee.

Name *Watters Co*

Invoice #	17105		Invoice Date	8-14-84	
Quantity	Description	Unit	Price	TOTAL	
2	Handlans		26.15	12	3.30
1	Plate		2.21	2.21	
1	Count down			8.45	
2	Winn Bauls		21.25	2.50	
16	4x8 3/4 AC		20.75	332.00	
24	2x4x12		3.36	80.64	
6	1x4x12 #3		1.26	7.56	
4	1x12x12 #3		6.84	27.36	
16	2x4x12		4.54	72.64	
				547.06	
Received by <i>H. J. Watters</i>					
SALES TAX				36.17	
TOTAL				583.23	

9/31/84

JOURNAL ENTRY TO
WOM #3710-2510 - JE#28



SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80218
(303) 294-0150

INVOICE No 58101

RECEIVED

DATE 8/20/84

SEP 10 1984

SOLD
TO

Walters CM
7951 E maplewood, Ave.
Suite 200
Englewood, CO 80111

SHIP
TO

9191 Sheridan

OUR ORDER NO	CUSTOMER ORDER NO	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll
26227	17108	2	NET 30	WC	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
200 ea	8' LE Cones			27.00/c	54.00
				State	1.62
				City	1.62
				RTD	.32
					57.56

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS AMOUNT - IF INCORRECT RETURN AT ONCE.





SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80218
(303) 295-0150

RECEIVED

SEP 10 1984

BILL WALTERS
SALES

INVOICE No 58188

DATE 9-21-84

S
O
L
D
T
O

Walters C.M. Construction
5975 S. Syracuse #107
Englewood, Co 80111

S
H
I
P
T
O

Westminster bank

OUR ORDER NO	CUSTOMER ORDER NO	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll
C26278	17110	2	NET 30	WC	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
200 ea.	8" SE Cone snapties			23.00c	46.00
				State	1.38
				City	1.38
				RTD	.28
					49.04

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE



ENT COPY

Plant
Attended
8400 Fenton
Suburban Redi Mix Co.
Plant
Brighton
11755 Brighton Rd.
Phone 421-0720
Driver
Date
18-18
Cubic Yds. Ordered
CY Ordered
Customer's
Order No.
Date
9-12
1954

QTY	CONCRETE	PRICE	AMOUNT
2	CY 6" TYPE 1 SLAB TYPE 2 3/8" IN.		
	WATER NOT REPAID	55.00	110.00
	AIR ENTRAINMENT	YES	
	POZZOLITH	322	344
	CALCIUM CHLORIDE	USE	QUICK GUTTER, PAVING, FOOTINGS, WALLS.
	MAX FILLING	4 INCH	
	PUMP M.S.		

SERVICE CHARGE:		FOR LOADS ORDERED LESS THAN 4 CU YDS	
First Time To Unload This Load	14	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$30.00 PER HOUR (85¢ PER MIN) FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT	99.00
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY		WATER ADDED ON JOB	29.70
Left Plant	2 1/2	Arrived Job	594
	3.35	Finished Unloading	
SUBURBAN REDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR			
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF INVOICE			
Z 8832	Customer's Signature	102564	102564

CAUTION: Freshly mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement material gets into eyes, rinse immediately with large amounts of water.

ENT COPY

Plant
Brighton
11755 Brighton Rd.
Phone 421-0720
Driver
Date
18-18
Cubic Yds. Ordered
CY Ordered
Customer's
Order No.
Date
9-12
1954

QTY	CONCRETE	PRICE	AMOUNT
2	CY 6" TYPE 1 SLAB TYPE 2 3/8" IN.		
	WATER NOT REPAID	55.00	110.00
	AIR ENTRAINMENT	YES	
	POZZOLITH	322	344
	CALCIUM CHLORIDE	USE	QUICK GUTTER, PAVING, FOOTINGS, WALLS.
	MAX FILLING	4 INCH	
	PUMP M.S.		

SERVICE CHARGE:		FOR LOADS ORDERED LESS THAN 4 CU YDS	
First Time To Unload This Load	14	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$30.00 PER HOUR (85¢ PER MIN) FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT	99.00
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY		WATER ADDED ON JOB	29.70
Left Plant	2 1/2	Arrived Job	594
	3.35	Finished Unloading	
SUBURBAN REDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR			
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF INVOICE			
Z 8832	Customer's Signature	102564	102564

CAUTION: Freshly mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement material gets into eyes, rinse immediately with large amounts of water.

CUSTOMER'S COPY

Plant
Armeda
5400 Fenton
Brighton
11755 Brighton Rd.
Phone 421-0720

Order No. 3710-2510 Date 9-10-84
Cite Tag Order 404

Name
Job
Address

QTY.	CONCRETE	PRICE	AMOUNT
4	CV 2 TYPE 2 3/4 INK		
	AIR ENTRAINMENT		
	POZZOLITH 322 3/4 EARLY		
	CALCIUM CHLORIDE		
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, PLATWORK, FLOOR		
	MAX SLUMP 4-6 INCH		
	PUMP MIX		
	FOR LOADS ORDERED LESS THAN 4 CU YDS		
	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR 185¢ PER MIN FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT		
	ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY		
	STATE TAX		
	CITY TAX		
	ATO TAX		
	COUNTY TAX		
	SUB TOTAL		
	WAITING TIME		
	TOTAL CHARGE		

CAUTION: Supply mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin when possible and wash exposed skin areas promptly with water. If any cement materials get into eyes, rinse immediately and seek medical attention. 9999 REPT OF REACH OF CHA PAPER

STANDARD UNIT

Plant
Armeda
5400 Fenton
Brighton
11755 Brighton Rd.
Phone 421-0720

Order No. 3710 Date 9-10-84
Cite Tag Order 404

Name
Job
Address

QTY.	CONCRETE	PRICE	AMOUNT
4	CV 2 TYPE 2 3/4 INK	52.50	210.00
	AIR ENTRAINMENT		
	POZZOLITH 322 3/4 EARLY		
	CALCIUM CHLORIDE		
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, PLATWORK, FLOOR		
	MAX SLUMP 4-6 INCH		
	PUMP MIX		
	FOR LOADS ORDERED LESS THAN 4 CU YDS		
	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR 185¢ PER MIN FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT		
	ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY		
	STATE TAX		
	CITY TAX		
	ATO TAX		
	COUNTY TAX		
	SUB TOTAL		
	WAITING TIME		
	TOTAL CHARGE		

CAUTION: Supply mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin when possible and wash exposed skin areas promptly with water. If any cement materials get into eyes, rinse immediately and seek medical attention. 9999 REPT OF REACH OF CHA PAPER

CUSTOMER'S COPY

Suburban Redili Mix Co.

Plant
Brighton
11755 Brighton Rd.
Phone 421-0720

Order No. 47 Date 8-30-84

Customer's Name
Walter Con

Address
3710 - 2810 - whole

Concrete
Bar 2 34

Price
52.50

Amount
170.63

Service Charge
23

Waiting Time
11.40

State Tax
1.12

City Tax
1.12

County Tax
1.12

Sub Total
176.77

Total
176.77

Customer's Signature
Krisin

Customer's Name
Krisin

Customer's Address
3710 - 2810 - whole

Customer's Phone
421-0720

Customer's Order No.
47

Customer's Date
8-30-84

Customer's Name
Walter Con

Customer's Address
3710 - 2810 - whole

Customer's Concrete
Bar 2 34

Customer's Price
52.50

Customer's Amount
170.63

Customer's Service Charge
23

Customer's Waiting Time
11.40

Customer's State Tax
1.12

Customer's City Tax
1.12

Customer's County Tax
1.12

Customer's Sub Total
176.77

Customer's Total
176.77

Customer's Signature
Krisin

Customer's Name
Krisin

Customer's Address
3710 - 2810 - whole

Customer's Phone
421-0720

Customer's Order No.
47

Customer's Date
8-30-84

Customer's Name
Walter Con

Customer's Address
3710 - 2810 - whole

Customer's Concrete
Bar 2 34

STATEMENT COPY

Suburban Redili Mix Co.

Plant
Brighton
11755 Brighton Rd.
Phone 421-0720

Order No. 47 Date 8-30-84

Customer's Name
Walter Con

Address
3710 - 2810 - whole

Concrete
Bar 2 34

Price
52.50

Amount
170.63

Service Charge
23

Waiting Time
11.40

State Tax
1.12

City Tax
1.12

County Tax
1.12

Sub Total
176.77

Total
176.77

Customer's Signature
Krisin

Customer's Name
Krisin

Customer's Address
3710 - 2810 - whole

Customer's Phone
421-0720

Customer's Order No.
47

Customer's Date
8-30-84

Customer's Name
Walter Con

Customer's Address
3710 - 2810 - whole

Customer's Concrete
Bar 2 34

Customer's Price
52.50

Customer's Amount
170.63

Customer's Service Charge
23

Customer's Waiting Time
11.40

Customer's State Tax
1.12

Customer's City Tax
1.12

Customer's County Tax
1.12

Customer's Sub Total
176.77

Customer's Total
176.77

Customer's Signature
Krisin

Customer's Name
Krisin

Customer's Address
3710 - 2810 - whole

Customer's Phone
421-0720

Customer's Order No.
47

Customer's Date
8-30-84

Customer's Name
Walter Con

Customer's Address
3710 - 2810 - whole

Customer's Concrete
Bar 2 34

TOOL & ANCHOR SUPPLY INC.

'The Construction Supply Professionals'

P.O. Box 904 • Aurora, Colorado 80040

RECEIVED INVOICE

7436

AUG 29 1994

(303) 320-4573

INVOICE DATE
BILL L. WALTERS - 27-89
CONSTRUCTION MATERIALS

TO

Walters Co
7951 E. Maplewood #200
Englewood, Colo 80111

SALES PERSON 7191 Shelden Blvd.

3710-2510

QTY. ORDERED	QTY. SHIPPED
1	1
1	1

DESCRIPTION
1 1/4" N/Cs. Air
can rapid lap
cutting fluid

UNIT PRICE	TOTAL
34.95	34.95
6.75	6.75
	41.70

Raymond

A finance charge of 2 1/2% per month,
equal to 21% APR, will be charged
on all past due amounts.
Please pay directly from this invoice.
No statement will be sent unless requested.

State Tax
City Tax
RTD Tax
Shipping Charges
TOTAL

126

25

43.41

Thank You



RECEIVED

INVOICE

R 30990

SUPPLY, INC.

SEP 10 1984

5150 FOX STREET
DENVER, COLORADO 80216
(303) 233-0150

BILL L. WALTERS

CONSTRUCTION MANAGEMENT, INC.

DATE 8-21-84

S
O
L
D
T
O

Walters C.M. Construction

S
H
I
P
T
O

9191 N. Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll.
R1306	17112	2	NET 30		
QUANTITY	DESCRIPTION			PRICE	AMOUNT
	Rental Equipment per attached			.10 each	10.00
				State	.30
				RTD	.06
					10.36

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.

CCS SUPPLY CO.
 DISTRIBUTORS OF CONSTRUCTION MATERIALS
 3150 FOX
 DENVER, COLORADO 80214
 TELEPHONE 303-620-9120

RENTAL INVOICE

SOLO
TO

W. J. C. M.

Job 3700-2510 Q70

JOB LOCATION

9191 N. Sheridan

DATE SHIPPED	CUSTOMER ORDER NUMBER	TERMS	INVOICE DATE	INVOICE NUMBER
	17112	15 TO DAYS-NET 30 DAYS	5-22-84	
QUANTITY	DESCRIPTION			AMOUNT
100 in	Steel Wedges			.10 ea / mo
<p>All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.</p>				
				SIGNATURE

RENTAL PERIOD	DATE	TIME OUT	TO	DATE	TIME IN	TOTAL
RENTAL RATE - DAY	WEEK	MONTH				
PURCHASE OPTION	YES <input type="checkbox"/>	NO <input type="checkbox"/>	PRICE \$			
SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.						SALES TAX
I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:						TRANSPORTATION OUT
NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE						TRANSPORTATION IN
BY	TITLE				DATE	TOTAL

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE



RECEIVED

INVOICE

R 30938

SUPPLY, INC.

SEP 10 1984

8150 FOX STREET
DENVER, COLORADO 80216
(303) 236-0150BILL L. WALTERS
CONSTRUCTION MANAGEMENT, INC.

DATE 8/20/84

S
O
L
D
T
O

Walters CM

S
H
I
P
T
O

9191 Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Pgs of Cont.
1303	17108	2	NET 30	OT	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
	RENTAL EQUIPMENT PER ATTACHED				12.50
				State	.38
				RTD	.08
					12.96

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF RECEIPT RETURN AT ONCE.

CCS SUPPLY CO.
DISTRIBUTORS OF CONSTRUCTION MATERIALS
5130 FOX
DENVER, COLORADO 80214
TELEPHONE 303-420-9120

RENTAL INVOICE

3710-2510

Q20

SOLD TO: Walters C M
Job = 3700

JOB LOCATION

9/91 Swinden Blvd

DATE SHIPPED	CUSTOMER ORDER NUMBER	TERMS	INVOICE DATE	INVOICE NUMBER
	17108	15 15 DAYS-NET 30 DAYS	8-26-84	
QUANTITY	DESCRIPTION			AMOUNT
12.00	Steel Wedges			.10 ea / mo
<p>All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.</p> <p>SIGNATURE _____</p>				

RENTAL PERIOD	DATE	TIME OUT	TO	DATE	TIME IN	TOTAL
RENTAL RATE - DAY	WEEK	MONTH				
PURCHASE OPTION	YES <input type="checkbox"/>	NO <input type="checkbox"/>	PRICE \$			
SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.						SALES TAX
I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:						TRANSPORTATION OUT
NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE						TRANSPORTATION IN
BY	TITLE	DATE				TOTAL

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE

FILE CODE - J FUTURE DATE

--- PROJECT INCOME / COST DISTRIBUTION ---

094910

WALTERS CONST. BRANCHMENT -99-

PAGE 1

10/31/64

PROJECT NO.	CODE NO.	PT NO.	TYPE NO.	VENDOR / CLIENT NAME	INV. NO. / C/L TRANS.	INCOME AMOUNT	COST AMOUNT	BURST NO.	GEN./LISC ACCT. NO.
-------------	----------	--------	----------	----------------------	-----------------------	---------------	-------------	-----------	---------------------

3710 WYLAND OFFICE FIRM

1130	01			LAB. 101404		9140.64		PR02-0103	300001P
1130	01			CS. 2101404		942.19		PR02-0104	301001P
1130	03			JE 13		9201.00		CL01-0410	303001P
1130	00			COUNTY LINE LASHWILL	5045237	974.40		PJ03-0104	302001P

TOTAL PER CODE - 1130 -

9438.23

1160	02			WYLAND SUPPLY CO	3220	970.74		PJ04-0043	302001P
------	----	--	--	------------------	------	--------	--	-----------	---------

TOTAL PER CODE - 1160 -

970.74

1330	02			AIR PRODUCTS AND CHEMICAL	362 79051	917.82		PJ04-0034	302001P
------	----	--	--	---------------------------	-----------	--------	--	-----------	---------

TOTAL PER CODE - 1330 -

917.82

1330	01			LAB. 100704		910.73		PR01-0177	300001P
1330	01			CS. 2100704		63.23		PR01-0178	301001P
1330	01			LAB. 101404		925.80		PR02-0105	300001P
1330	01			CS. 2101404		90.04		PR02-0106	301001P
1330	01			LAB. 102304		930.76		PR04-0101	300001P
1330	01			CS. 2102304		97.23		PR04-0102	301001P
1330	02			WESTERN FORTRESS	001277	983.76		PJ04-0046	302001P

TOTAL PER CODE - 1330 -

9172.67

2200	03			HENRY CONSTRUCTION CO.	3709	94346.00		PJ03-0270	303001P
------	----	--	--	------------------------	------	----------	--	-----------	---------

TOTAL PER CODE - 2200 -

94346.00

2210	03			WESTERN CONCRETE	2002	61045.00		PJ03-0000	303001P
------	----	--	--	------------------	------	----------	--	-----------	---------

TOTAL PER CODE - 2210 -

61045.00

2220	04			LAB. 100704		9107.00		PR01-0179	300001P
2220	04			CS. 2100704		632.10		PR01-0180	301001P
2220	02			BEST LUMBER CO	47637	9306.00		PJ04-0042	302001P

TOTAL PER CODE - 2220 -

9623.90

2310	02			BEST LUMBER CO	47053	914.79		PJ04-0020	302001P
2310	04			CCS SUPPLY	31160	910.36		PJ04-0020	304001P
2310	04			HENRY TOWER	3521	937.12		PJ04-0032	304001P
2310	04			PIONEER RENTAL SAREPHEW IN	7,483.91	9170.27		PJ00-0003	304001P

TOTAL PER CODE - 2310 -

9623.90





SUPPLY, INC.
8150 FOX STREET
DENVER, COLORADO 80218
(303) 293-0169

RECEIVED

INVOICE

31169

OCT 11 1984
BILL L. WALTERS
CONSTRUCTION MANAGEMENT, INC.

DA 10/84

SOLE
TO

Walters CM
7951 E Maplewood ave
Suite 200
Englewood, CO 80111

SHIP
TO

9191 N Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Pay or Cash
1306	PO #17112	2	NET 30	OT	
QUANTITY	DESCRIPTION		PRICE	AMOUNT	
	RENTAL EQUIPMENT PER ATTACHED			10.00	
			State	.30	
			RTD	.05	
				10.36	

ALL MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF NECESSARY RETURN AT ONCE.

Shatters CM

DD-2

Power RENTAL

RENTAL INVOICE

NUMBER

PAGE

1

POWER RENTAL EQUIPMENT INC. 725 W. 39TH AVE. DENVER CO. 80216 303/400-0973 FAX 303/400-1335

LESSEE
WALTERS CONSTRUCTION MGMT
7951 EAST MAPLEWOOD AVENUE
SUITE 200
ENGLEWOOD

020335
FOR USE AT SITE
92ND & SHERIDAN BLVD.

RECEIVED

SEP 17 1984

CO 80111

ORIGIN DATE TERMS NET EOH CUSTOMER REFERENCE INVOICE DATE MONTHLY BILLING

9/25/84

P.O. # 18092

ITEM NUMBER CATALOG DESCRIPTION U/M USAGE UNIT PRICE -RENT FROM 1 TO 2 SOLD -2 RENT

1000	POWER DRIVE 1/2 HP E	1-0	8/24 15	8/25 15	100.00
1101	RAM TAMPER 1000B	1-0	8/27 07	8/28 14	350.00 F
	PICKUP/DEL. ZONE B EA	1-0	7.29	8/24 14	7.29 F
	BUMPER PINTLE ADAPTE EA	1-0	15.00	8/24 15	15.00

ADDITIONAL COST
CREDIT MEMO TO BE
ISSUED 8/23/84 PER
KAL @ POWER RENTAL

DELIVERY OUT OF TAX AREA NUMBER
TAXABLE 8.40 TAX 3.600 %
NON-TAX 7.29 ADD'L TAX

176.27

5.58 TOTAL

CHARGES OVER 30 DAYS

APPENDIX E
PROBLEMS AND SOLUTIONS

ASSIGNMENT 1

Analyze and suggest ways to improve the erection process of the precast structure of the Bank of Westminster from the given timelapse film. Set up a crew balance chart for analysis and comparison as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

- Given:
- 1) Welder 1 is dressed in dark pants and dark shirt.
 - 2) Welder 2 is dressed in dark pants and white shirt.
 - 3) Foreman is dressed in dark pants, white shirt, and red hard hat.
 - 4) Equipment Operator is dressed in dark pants, dark shirt, and dark ball cap.
(NOTE: Operator does not leave cab of crane.)
 - 5) Each frame was taken every 60 seconds, therefore 1 frame is equal to 1 minute.
 - 6) The 60 second interval starts at the start of film.
 - 7) The second half of the film was taken at 15 second intervals, therefore 4 frames equals 1 minute.

FRAMES	HRS				
660	2.2				
		IDLE			IDLE
425		PLACE & WELD "T"			HOLD "T"
480		IDLE			PICK UP "T"
					MOVE "T"
485		PLACE & WELD "T"		SUPERVISION	HOLD "T"
420		IDLE		HOOK UP "T"	PICK UP "T"
345		WELD "T"			
		PLACE "T"		SUPERVISION	HOLD "T"
320					
		POSITION "T"		POSITION "T"	PLACE "T"
315					
280		IDLE		HOOK UP "T"	PICK UP "T"
		WELD "T"		IDLE	HOLD "T"
245					
		IDLE		HOOK UP "T"	PLACE "T"
210					
175				SUPERVISION	
140					
105		WELD		SET TRANSIT	HOLD
70					
35		PLACE WEST CURTAIN WALL		LEVEL WEST WALL	POSITION WEST WALL
0					
		WELDER 1	WELDER 3 (SEE WELDER 1)	FOREMAN	EQUIP OPER

E-3

ASSIGNMENT 2

Analyze and suggest ways to improve the erection process of the brick veneer of the Bank of Westminster from the given timelapse as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

- Given:
- 1) Foreman is heavy set with white hard hat dressed in tank jacket and dark pants.
 - 2) Two bricklayers both dressed in maroon shirts and dark pants with white hard hats.
 - 3) Laborer dressed in gray jacket, dark pants, and red hard hat.
 - 4) Laborer dressed in gray jacket with blue shoulders, dark pants, and white hard hat.
 - 5) Film was at 1 second intervals, therefore 60 frames equals 1 minute.

Frames/Minutes

1660+

1565 26

1540+

1420+

1300+

1080+

960+

840+

720+

600+

480+

360+

240

120

0

Placing
Brick

Placing Brick

Positioning
Bricks for
Masons

Getting
Bricks

Positioning
Cement for
Masons

Getting Cement
For Masons

Working on
Scaffold

Helping Masons

Setting Up
Scaffold

Mason 1

Mason 2

Laborer

APPENDIX F
BIBLIOGRAPHY

BIBLIOGRAPHY

- Barrie, Donald S. Directions in Managing Construction. New York, N.Y.: John Wiley and Sons, 1981.
- Culbertson, Alan N. and Kenney, Donald E. Contract Administration Manual for the Design Professional. New York, N.Y.: McGraw Hill Book Company, 1983.
- Douglas, Clarence J. and Munger, Elmer L. Construction Management Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969.
- Oppenheimer, Samuel P. Directing Construction for a Profit. New York, N.Y.: McGraw Hill Book Co., 1971.
- Parker, Henry W. and Oglesby, Clarkson H. Methods Improvement for Construction Managers. New York, N.Y.: McGraw Hill Book Company, 1972.
- Reiner, Laurence E. Handbook of Construction Management. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1972.
- Rubey, Henry and Milner, Walker W. Construction and Professional Management. Oklahoma: The Macmillan Company, 1966.

END

FILMED



DTIC

UNCLASSIFIED
Technical
Report
distributed by



DEFENSE

TECHNICAL

INFORMATION

CENTER

OTIC

*Acquiring Information -
Imparting Knowledge*

DEFENSE LOGISTICS AGENCY
Cameron Station
Alexandria, Virginia 22304-6145

UNCLASSIFIED

UNCLASSIFIED

NOTICE

We are pleased to supply this document in response to your request.

The acquisition of technical reports, notes, memorandums, etc., is an active, ongoing program at the **Defense Technical Information Center (DTIC)** that depends, in part, on the efforts and interest of users and contributors.

Therefore, if you know of the existence of any significant reports, etc., that are not in the **DTIC** collection, we would appreciate receiving copies or information related to their sources and availability.

The appropriate regulations are Department of Defense Directive 3200.12, DoD Scientific and Technical Information Program; Department of Defense Directive 5200.20, Distribution Statements on Technical Documents (*amended by Secretary of Defense Memorandum, 18 Oct 1983, subject: Control of Unclassified Technology with Military Application*); Military Standard (*MIL-STD*) 847-B, Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense; Department of Defense 5200.1R, Information Security Program Regulation.

Our Acquisition Section, **DTIC-FDAB**, will assist in resolving any questions you may have. Telephone numbers of that office are: (202) 274-6847, (202) 274-6874 or Autovon 284-6847, 284-6874.

DO NOT RETURN THIS DOCUMENT TO DTIC

**EACH ACTIVITY IS RESPONSIBLE FOR DESTRUCTION OF THIS
DOCUMENT ACCORDING TO APPLICABLE REGULATIONS.**

UNCLASSIFIED

Thesis

B72585 Bossa

c.1 The Bank of Westminster
and Hyland Park construc-
tion contracts as engi-
neering student classroom
projects: construction
phase.

Thesis

B72585 Bossa

c.1 The Bank of Westminster
and Hyland Park construc-
tion contracts as engi-
neering student classroom
projects: construction
phase.

thesB72585

The Bank of Westminster and Hyland Park



3 2768 000 78103 3

DUDLEY KNOX LIBRARY